

**RAYMOND ARTHUR DART: HIS LIFE AND WORK**

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I attest that this thesis is my own work and has not  
been presented to any other university.



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ACID FREE

## ABSTRACT

To date no definitive work has been produced on the Australian scientist Raymond Arthur Dart. This thesis aims at correcting such a lack. Born in Queensland in 1893, he was most famous for his discovery in South Africa in 1924 of the missing link between ape and man, *Australopithecus africanus*, (the Taung skull) which changed world opinions on the evolution of the human species.

Arguments are illustrated of the huge difficulties he had to overcome in establishing his claims and in so doing sustaining his findings against the opposition of the British scientific establishment members of the day who, scathingly condemned his work and influenced other scientists throughout the world to do likewise. Arguments are put forward concerning the prejudices of the day of entrenched ideas of human evolution and also of class bigotry which existed and against Colonials expressing opposing views to their British peers. Points are established as to how Raymond Dart coped over decades with this problem and why he was so firm in his convictions of his assessment of this Taung skull. It is argued his strong character and intellect were of enormous importance as were factors in the moulding of his character of experiencing in Australia in his youth, tough farm life, governed by devoted religious parents and schooling wherein also both the work and religious ethic played a powerful role. It is shown, how the religious aspect diminished from 1911 when he studied Science and came into contact with Darwin's work at the University of Queensland. Points are made as to how the work ethic continued to flourish under the influence of his mentors there and in his medical studies at the University of Sydney, with his army service and the continuing strong influence of Sir Grafton Elliot Smith at the University College, London. It is shown that, cast into the daunting role at the age of twenty-nine to the Chair of Anatomy at the newly established Medical School in Johannesburg, by his sheer vitality and drive, his inspired vision, laden with new concepts, many bitterly opposed, he lifted the University of the Witwatersrand to world prominence, not only by his major discovery of *Australopithecus africanus* in 1924 but by the quality of the students he produced to become leaders in their fields. Points are made of his additional wide-ranging researches in medicine, anthropology, human migrations and culture. The importance is shown of Dr Broom's discovery at Sterkfontein, South Africa of adult australopithecines, thus confirming Dart's initial discovery, as is Dart's own discovery of more of the species at Makapansgat and his assessment of their culture, some aspects of which became highly disputed. In the light of later findings by others proving similar cultural lifestyle affinities of man's near relatives, argument is made for the reassessment of much of Dart's disputed work in regard to tool use and cultural behaviour of the australopithecines.

## ABBREVIATIONS

AAAS	Australian Association for the Advancement of Science.
ACT	Australian Capital Territory.
<i>Afr. Stud.</i>	African Studies.
AAMC	Australian Army Medical Corps.
AIF	Australian Imperial Forces.
<i>Amer. Anthropol.</i>	<i>American Journal of Physical Anthropology.</i>
<i>Amer. J. phys. Anthropol. n. s.</i>	<i>American Journal of Physical Anthropology. new series.</i>
Assoc. Sci. Tech. Socs. S. A.	Associated Scientific and Technical Societies of South Africa.
<i>Anthrop. Anz.</i>	<i>Anthropologischer Anzeiger.</i>
ANL	Australian National Library.
ANZAAS	Australian and New Zealand Association for the Advancement of Science.
AUQ	Archives University of Queensland.
<i>Bantu Stud.</i>	<i>Bantu Studies.</i>
BAAS	British Association for the Advancement of Science.
<i>Brit. J. phys. Med.</i>	<i>British Journal of Physical Medicine.</i>
BBMNH(G).	<i>Bulletin of the British Museum of Natural History (Geology).</i>
<i>Clin. Med. Surg.</i>	<i>Clinical Medicine and Surgery.</i>
<i>Curr. Anthropol.</i>	<i>Current Anthropology.</i>
ed.	edited.
<i>Folia anat. Jap.</i>	<i>Folia Anatomica Japonica.</i>
FRCS	Fellow of the Royal College of Surgeons.
FRS	Fellow of the Royal Society.
Illus.	Illustrated.
<i>Illus. Lond. News.</i>	<i>Illustrated London News.</i>
ISMA	Institute for the Study of Man in Africa.
<i>Internat. geol. Cong.</i>	<i>International Geological Congress.</i>
IGS.	Ipswich Grammar School.

<i>IGSM</i>	<i>Ipswich Grammar School Magazine.</i>
<i>IGSMCI</i>	<i>Ipswich Grammar School Magazine Centenary Issue.</i>
<i>J.anat.</i>	<i>Journal of Anatomy.</i>
<i>J.comp.Neurol.</i>	<i>Journal of Comparative Neurology.</i>
<i>J.dent.Ass.S.Afr.</i>	<i>Journal of the Dental Association of South Africa.</i>
<i>J.Hum.Evol.</i>	<i>Journal of Human Evolution.</i>
<i>J.med.Ass.S.Afr.</i>	<i>Journal of the Medical Association of South Africa.</i>
<i>J.nerv.ment.Dis.</i>	<i>Journal of Nervous and Mental Diseases.</i>
<i>J.Roy.anthrop.Inst.</i>	<i>Journal of the Royal Anthropological Institute.</i>
<i>J.S.Afr.vet.med.Ass.</i>	<i>Journal of the South African Veterinary Medical Association.</i>
<i>Med.J.S.Afr.</i>	<i>Medical Journal of South Africa.</i>
<i>Med.Proc.</i>	<i>Medical Proceedings.</i>
<i>Mus.Man.Sci.</i>	<i>The Museum of Man and Science.</i>
<i>NSW</i>	<i>New South Wales</i>
<i>Proc.Pan-Afr.Cong.Prehist.</i>	<i>Proceedings of the Pan African Congress in Prehistory.</i>
<i>Proc.zool.Soc.Lond.</i>	<i>Proceedings of the Zoological Society of London.</i>
<i>Qld.</i>	<i>Queensland.</i>
<i>Rhod.min.J.</i>	<i>Rhodesian Mining Journal.</i>
<i>RPAH.</i>	<i>Royal Prince Alfred Hospital.</i>
<i>S.A.M.B.</i>	<i>South African Museums Association Bulletin.</i>
<i>S.Afr.archaeol.Bull.</i>	<i>South African Archaeological Bulletin.</i>
<i>S.Afr.Assn.Adv.Sci.</i>	<i>South African Association for the Advancement of Science.</i>
<i>S.Afr.geog.J.</i>	<i>South African Geographical Journal.</i>
<i>S.Afr.J.med.Sci.</i>	<i>South African Journal of Medical Sciences.</i>
<i>S.Afr.J.occupat.Therap.</i>	<i>South African Journal of Occupational Therapy.</i>
<i>S.Afr.J.Physiotherap.</i>	<i>South African Journal of Physiotherapy.</i>

<i>S. Af. J. Sci.</i>	<i>South African Journal of Science.</i>
<i>S. Afr. mech. Engr.</i>	<i>South African Mechanical Engineer.</i>
<i>S. Afr. med. J.</i>	<i>South African Medical Journal.</i>
<i>S. Afr. Rlys. Harb. Mag.</i>	<i>South African Railways and Harbours Magazine.</i>
<i>S. Afr. Sci.</i>	<i>South African Science.</i>
<i>Sci. S. Afr.</i>	<i>Scientific South Africa.</i>
<i>Trans. Rhod. Sci. Ass.</i>	<i>Transactions of the Rhodesia Science Association.</i>
<i>Trans. Roy. Soc. S. Afr.</i>	<i>Transactions of the Royal Society of South Africa.</i>
<i>Transv. educat. News.</i>	<i>Transvaal Education News.</i>
<i>Transv. Mus. Mem.</i>	<i>Transvaal Museum Memoirs.</i>
<i>U. S. Med. Soc.</i>	<i>University of Sydney Medical Society.</i>
<i>Z. Morph. Anthropol.</i>	<i>Zeitschrift für Morphologie und Anthropologie.</i>
<i>Zool. Soc. Lond. Symp.</i>	<i>Zoological Society of London Symposia.</i>

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Thirty-two years old Professor Raymond Arthur Dart with the Taung skull *Australopithecus africanus* he discovered in South Africa in 1924. Photo taken shortly after the announcement of the discovery in February 1925.

(by courtesy Barlow Rand Archives, Johannesburg)

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## INTRODUCTION

Biography is considered an important branch of history. As in the writing of history, it is dependent upon selective ordering and interpretation of materials, written and oral established through research and personal recollection. Significant biographies are valuable historical contributions, such as George Cavendish's life of Thomas Cardinal Wolsey, printed in 1641 or James Boswell's, *The Life of Samuel Johnson L.L.D.* (1791). Lytton Strachey achieved fame with his work, *Eminent Victorians*. The work is acknowledged as a landmark in the history of biography; as Margaret Drabble pointed out, the author brought in a new age of free enquiry. A characteristic recent biography, *The Brontës*, by Juliet Barker, is considered to be the first definitive history of the Brontës and in which she demolishes many myths. Barker located new letters by every member of the family and several original manuscripts. She achieved a radically new picture of the Brontës' lives. In some cases biographers when writing on subjects of centuries past were impeded by the lack of reliable papers, letters and other memorabilia. A disadvantage was that sometimes editors would revise works, thus altering facts. On the other hand some biographers, as contemporaries of their subjects, had the advantage of material being more readily available to them.<sup>1</sup>

As a biography is the life of a person, I chose this form as more appropriate for this thesis to cover Raymond Dart's life, as not only was I able to interview my subject, members of his family and many of his colleagues, but additionally there was the availability of a wealth of his own and his colleagues' scientific papers, books as well as other material. I was also able to locate new source material from a number of archival collections which were not previously available. Information has been elicited from the pages of scientific journals, newspapers, books, photos, letters, archives of the National Library, Canberra, Ipswich Grammar School, University of Queensland, University of Sydney Archives, Shellshear Museum, Medical School, also the Medical Society of the same university, Royal Prince Alfred Hospital, Sydney, University of the Witwatersrand, Barlow Archives

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<sup>1</sup> *Encyclopaedia Britannica*, vol. 23, pp. 186-7, 1994; Margaret Drabble, (ed.), *The Oxford Companion to English Literature*, London, 5th edn., pp. 101-02, 120, 179, 198, 942; Juliet Barker, *The Brontës*, Weidenfeld and Nicholson, London, 1994, pp. 1-1003.

Johannesburg and University College London. Rare Books of the Fisher Library of the University of Sydney were also examined as were videos and tapescripts from various sources. The work is aimed to illustrate Dart's life's activities and endeavours also to give insight into his character, which enabled him to survive attacks on his work and discoveries.

Of Raymond Arthur Dart in 1950, the famous palaeontologist Dr Robert Broom penned these prophetic words. 'Here was a man who made one of the greatest discoveries in the world's history, a discovery that may yet rank in importance with Darwin's *Origin of Species*; and English culture treats him as if he had been a naughty schoolboy.'<sup>2</sup>

For decades Professor Dart dazzled his colleagues, associates and students by his medical and anthropological research, methodology and pioneering discoveries in a number of related scientific disciplines. His abounding energy and resourcefulness generated extraordinarily fast and sound development of the Medical and Dental faculties over the formative years of the University of the Witwatersrand in Johannesburg, South Africa, and benefited immeasurably that university over the thirty-six years he occupied the chair of anatomy and held concurrently for eighteen years the Deanship of the Faculty of Medicine. Beyond that time, as Emeritus Professor working at the Bernard Price Institute for Palaeontological Research within the same university, he had directed innumerable anthropological and ethnological investigations as diverse as prehistoric human migrations, racial origins, symbolism and the ritual practices of different contemporary cultures.

Little has been said about the sustained disbelief which Dart had to fight in order to establish the credentials of the Taung skull, *Australopithecus africanus* being due in large part to his having been born Australian. A scientist from the periphery of the civilized world, albeit latterly from University College, London, a colonial still in English eyes, was at a disadvantage in presenting a revolutionary thesis on his 1924 discovery on the origins of man to the scientists of the British scientific establishment. Not only did Professor Dart have to battle the assumptions of the scientists as to what and where the link would prove to be, but also their difficulty in believing a theory so revolutionary could come from a colonial or the evidence of it from Southern Africa. Considering the ingrained prejudices of

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<sup>2</sup> Robert Broom, *Finding the Missing Link*, Watts & Co., London, 2nd edn. 1951, first published in 1950, p. 27.

the European nations of the early 20th century, assuming supremacy in every field, it is not so remarkable that it took Dart and his supporters thirty years for most scientists to accept his claims based on his findings.

Because the minds of the scientists of the 20th century were locked into a different paradigm of the times, they could not accept that *Australopithecus* was what Raymond Dart declared him to be: the earliest man-ape. They could not accept that *Australopithecus* could have had so small a brain, nor that he could already be walking upright in such remote times—some South African australopithecine specimens have now been assessed as 3 million years old. Nor could they accept that such a 'missing link' between ape and man could have developed in Southern Africa. They expected a skull of earlier type than Neanderthal to turn up sooner or later, but they expected him in Europe or Asia. They learned little from the fact that earlier scientists had similarly ridiculed Java Man with less cranial capacity than Neanderthal when he was found by Dubois in the last decade of the 1800s. Their attitude is scarcely to be wondered at; Newton believed that science would unravel all the remaining natural mysteries in the generation following his own; confidence in the capacity of the rational sciences to solve all problems, physical and metaphysical was the prevailing mood. In anthropology scientists did not yet sense how assumptions were destined to flounder as they failed to ground them. They were reluctant, in the case of Dart's discoveries, to entertain the idea that baboons originating in the north of Africa might once have found a new living place in a sheltered valley in Southern Africa; that perhaps a single family of apes, maybe a few females led by a single patriarch out of tropical North Africa, could have joined them, driven by scarcity or perhaps predators.

Without Dart's knowledge of neurology he would not have recognized the Taung skull for what it was. While he was studying under Professor G. Elliot Smith in London he confronted the evolutionary problem of the Cetacean brain in the Eocene fossil endocranial cast made available there. At the Museum of the Royal College of Surgeons in London he astutely studied that pre-eminent brain collection.

This and other experiences with fossils and with brain evolutionary problems demanding an understanding of geology, into which, as well as biology, he had been introduced during his Science student days in Queensland, were indispensable in assessment of the Taung skull. Additionally, he possessed grounding in comparative neurology in his

medical degree at the University of Sydney which prepared him for the momentous challenge—a fossil skull significant for understanding human evolution—his discovery, of which he felt as having been rather fortuitous.

Without his knowledge of dentistry, and his own extensive study of primate teeth—written observations upon milk dentition of living primates were few—he would not have been able to recognize the form of the small canine and infant milk teeth in the prehistoric fossil as not of ape form.

Without his personal dynamism, infecting his students and associates with his own zeal and excitement, they would not have displayed the loyalty retained long after their Witwatersrand days; bringing him so eagerly their clues to the past, nor, they say, would they have been so eager to put forward theories to earn his approval, and in some cases their own fame.

Among Dart's colleagues and friends his emotional outbursts were legendary. A brilliant lecturer, he never spared himself to illustrate a point. His former students never forgot the famous 'crocodile walk', performed to demonstrate man's efforts to free himself from his reptilian ancestry, nor his brachiation along the pipes high above the lecture room. Unconventional he most certainly was but his unconventionality compelled interest in the lecture hall and in the laboratory too, where once he acquired the nickname the 'Terror of the Dissection Hall'.<sup>3</sup> Because of his insistence on consummate skill he wrote, 'To cease achieving skill by well-directed work during life is to die in that respect; just as surely as partial or complete death results from cessation of intra-uterine activities. Life is movement!'<sup>4</sup> His mood could be angry, sarcastic, caustic and, at other times sympathetic, forgiving and gentle: a man for all seasons of the mind.

Dart's concern for human suffering and disadvantage was evident early in his career. His encouragement of African and Asian students to undertake and complete tertiary studies within the University of the Witwatersrand was practical and effective: it extended beyond the lecture theatre. For example, recognizing the most insuperable difficulties these particular students encountered in actually reaching the university he arranged for quarters to be set up for them near campus. Students were

<sup>3</sup> Tobias, 'Raymond Arthur Dart: A Biographical Sketch and Appreciation', *The Leech*, vol. XXV111(3.4.5) Nov. 1958, p. 92.

<sup>4</sup> Dart, 'Significance of Skill', first published in *Transvaal Education News*, vols. 10, 11, 12, Oct. Nov. Dec. 1934, pp 39-41; 13-17, 15-17, later published as *Skill and Poise: Articles on Skill, Poise and Alexander Technique*, Stat books, London, 1996, p. 5.

assigned to tutorials and seminars deliberately to counter possible isolation or alienation among the widely varied ethnic groups.

The wide range of his skills, developed from the beginning of his adult life, included lecturing expertise, ability to utilize personality traits of staff and students to master their problems and lingual and verbal skills which he inculcated in his students. Above these he is renowned for his skill in conveying the significance of skill itself. His colleagues found him invariably stimulating and provocative and an invaluable catalyst in the turbulent field of palaeontology—a field characterized by strong emotions and a good deal of personal animosity. One special talent was his ability to achieve fruitful collaboration among colleagues on scientific projects.

To perpetuate his work, an Institute for the Study of Man in Africa was established in 1956 and the inauguration of an annual lectureship: the Raymond Dart Lecture. On the occasion of the first Raymond Dart Lecture in 1964, the University of the Witwatersrand conferred its honorary Doctorate of Science, not only on the speaker Dr S. H. Haughton, but on Dart himself, adding to his already extensive list of other honours, decorations, medals and degrees. A Museum of Man in Africa would also be dedicated to him.

From 1966—eight years after 'retirement'—Professor Dart occupied the Chair of Anthropology at the Avery Postgraduate Institute of the Institutes for the Achievement of Human Potential at Philadelphia in the United States of America, funded by the United Steel Workers Union of America. His lectures drew so many students they filled even the standing places to hear this scientist through to his nineties, expounding his theories of man's beginnings and sharing with them the enthusiasm and excitements attending a life devoted to exploring the ancient and not so ancient past. Dart would also establish a museum to house early human fossil specimens and lecture there alike to the public and school children.

In conjunction with his American appointment he assisted and advised Drs Glen Doman and Carl Delacato who devoted their lives to the care and cure of brain-damaged steel workers and retarded children of the community generally and those afflicted with Down's Syndrome. The particular skills he brought to this humanitarian work stemmed directly from his knowledge, accumulated over a lifetime, of brain development both in animals and man, and from his early appreciation of the techniques

developed by a fellow Australian, F. Matthias Alexander, who earlier this century comprehended the significance of our crucial human achievement of upright posture. Accordingly the Institutes for the Achievement of Human Potential have devised useful methods for activating brain cells. By means of a broad variety of auditory, visual, tactile, gustatory and olfactory stimuli, intensive and purposeful muscular exercise, each nervous system is provided with the greatest possible amount of sensory input. The method is used increasingly and with increasing success around the world, especially by parents of retarded children. (The benefits of Alexander's technique formed part of Professor Nikolaas Tinbergen's subject matter when he delivered his Nobel Prize lecture in 1974.)

From 1966 Raymond and Marjorie Dart for the next twenty years spent six months in Philadelphia and six months in Johannesburg on their shared projects. More astonishing is that this time was broken into three-monthly intervals in each country involving an immense amount of travel and necessary for the welfare of their son Galen's health who was permanently hospitalized though needed their regular visits. During these years among many projects undertaken were outstanding new discoveries of early human habitation and mining by Dart and his team in South Africa and in Swaziland, particularly the establishment that the first modern humans arose in South Africa, by skeletons recovered from Border Cave on the Swaziland border.

The story of Raymond Dart's frustrating struggle for acknowledgment of the great significance of the Taung skull and his theory of an Osteodontokeratic Age (bone, tooth and horn) culture preceding Stone Age man is, in two senses, a cautionary tale for bigots, be they scientific or national. Only minds kept consciously open to serious consideration of the unexpected, the unexpectedly given, are likely to lead us to the future as courageously as Raymond Dart led us still further back into the past; and forward in to the future by means of new medical therapies and continuing research into the neurological and physiological functioning of the brain.

## CHAPTER 1

### FORMATIVE YEARS

In November 1984 the journal *Science* 84 in its Fifth Anniversary Issue listed Raymond A. Dart's discovery of the Taungs (later Taung) skull as one of the twenty events that shaped the world of the 20th century.<sup>1</sup> As Charles Darwin's scientific assessments of the 19th century uncloaked his Theory of Evolution, Dart's recognition of the 'missing link' proved, in substance, that humankind had indeed evolved from its nearest primate progenitors in Africa some millions of years previously.

Like Darwin, the mantle of fame was also denied Dart for decades. He spent many lonely years in the wilderness after his discovery in 1924 of the skull he classified as *Australopithecus africanus* and named a new genus.<sup>2</sup> Scorned by his scientific peers of the day, vilified in the main, particularly by many religious groups, he also suffered the embarrassment of being made jest of in certain newspapers. Furthermore, his outstanding findings were blocked by what is now known to be the greatest anthropological fraud in scientific history, the 'Piltdown man'<sup>3</sup> and by ingrained ideas that the human genesis was of Asian origin. Ironically, such factors were supported by most of the eminent scientists of the day.

Decades passed before these convictions of his adversaries fell in tatters about them, and proof beyond doubt vindicated Dart's seminal discovery, and his assessment of it, as the long sought 'missing link' of human phylogeny. As well as this distinctive contribution, Dart's life endeavours encompassed many other disciplines of science in which his accomplishments, influence and benefits to society mark him out as a rare

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- 1 Phillip V. Tobias, (ed.), *Hominid Evolution: Past, Present and Future*, Alan R. Liss, Inc., New York, 1985, in Foreword, p.xix, quoting A. Hammond, (ed.), 'Century of the sciences: 20 discoveries that changed our lives', vol. 5, *Science* 8, 1984, pp.1-190.
  - 2 Raymond A. Dart, '*Australopithecus africanus* : The Man-Ape of South Africa', *Nature*, vol. 115, no. 2884, 7 Feb. 1925, pp.195-99.
  - 3 J. S. Weiner, *The Piltdown Forgery*, Oxford University Press, Chicago, 1955; J. S. Weiner, K. P. Oakley and W. E. Le Gros Clark, 'The Solution to the Piltdown Problem', *Bulletin of the British Museum of Natural History (Geology)*, 2, 1953, pp.141-46; Weiner, Oakley, and Le Gros Clark, 'Further contributions to the solution of the Piltdown Problem', *BBMNH(G)*, 2, (6), 1955, pp. 225-87.

individual, one of enormous intellect and capacity. As a farm lad from the Lockyer Valley in Queensland, Australia, eastward below the Great Dividing Range,<sup>4</sup> he emerged to enter the world's pre-eminent centres of medicine, from where he would cross the little known but burgeoning frontier of medical science to find himself, most unexpectedly, introducing it to the world.

An Australian, Dart came from sturdy immigrant stock, English, Irish and Scottish, people who had made their way to the island continent in hopes of finding new fields for farming better than those left behind in the smaller areas of the British Isles.<sup>5</sup>

As early as 1827, squatters had illegally occupied land over the mountain chain, the Great Dividing Range on the Darling Downs west of Brisbane in Queensland; free settlement commencing at Brisbane on the coast at Moreton Bay only in 1842 after eighteen years of convict settlement on site and dispersal.<sup>6</sup> With free settlement now available, the way lay clear for Dart's forefathers to approach, settle and rear their families and be sustained from plentiful produce grown on the newly available fertile soil of that state.

Dart's maternal great-grandparents had been the first of his forebears to arrive in Australia: Thomas and Eliza Logan (nee Dyas) immigrating to Sydney from Ireland in 1837. Mount Shannon, County Galway had been that of their abode and before them, their Scottish ancestors (Logan, Dyas and Clark) who fled their homeland in the late 1600s during disturbed times in that country.<sup>7</sup>

In the 1860s, most of the Logans drawn further north to Queensland from their Hunter Valley farms north of Sydney in New South Wales, travelled overland and settled on their first property 'Bannerfield', at

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4 Harold W. Dart, *Happenings Historic, Heroic and Hereditary*, the Author, Sydney, 1981, pp. 81-2.

5 Eliza Ann Dart, *The Reminiscences of Eliza Ann Dart*, Indooroopilly, (unpublished, 1946), pp.1-5; Harold W. Dart, pp.1-75; Frances Wheelhouse, *Raymond Arthur Dart: a Pictorial Profile: Professor Dart's Discovery of 'The Missing Link'*, Transpareon Press, Sydney, Australia, 1983, p.25.

6 Hector Holthouse, *An Illustrated History of Queensland*, Rigby, Adelaide, 1978, pp.93-4.

7 Eliza Ann Dart, pp.1-3.



Brookfield, 19 kilometres west of Brisbane. Others of their relations and friends in the Hunter Valley region followed by sea to join them there. Among these came a small girl Eliza Ann Brimblecombe who accompanied her parents. Aged eight, fair of hair with wide-set blue eyes, (born 3 July 1862, West Maitland, NSW), she was to play a paramount role in the second generation of Darts in Australia. She was the mother of Raymond Dart.<sup>8</sup>

Meanwhile Dart's paternal grandparents, William and Mary (*née* Potter), farmers in Devon, England, migrated directly to Queensland. In 1859, they began farming at Oxley Creek, now Graceville, with two of their children, John and Mary. William, their eldest son, had come to Australia in 1855, and, employed profitably as a wheelwright in Brisbane, had undoubtedly encouraged his parents to quit England for a kinder climate and great opportunities in Queensland.<sup>9</sup>

On 11 February 1860 the Darts' youngest son Samuel, was born in Indooroopilly near Brisbane. At the age of twenty, Samuel married Eliza Brimblecombe, now grown to a winsome seventeen years and eleven months, (fig.1). Samuel and Eliza would raise nine children - eight sons and one daughter, Raymond numbering fifth amongst them. In their advanced years they would adopt another daughter.<sup>10</sup> (fig.2).

Immediately upon marriage, the young couple had begun to farm on the Dart family property at Oxley Creek (now Graceville), but independent of spirit, soon moved to Sandy Creek (now Blenheim), undertaking the 96 kilometres journey on horseback.<sup>11</sup> Here in the Lockyer Valley they commenced farming their 640 acre (258 hectare) virgin land-holding, adding to it just 3 kilometres away, a second farm with fine creek frontage. Laidley, their nearest railhead, lay 18 kilometres distant.<sup>12</sup>

After four hard-working years the couple leased out the Blenheim properties, moving to less isolated Toowong, a suburb of Brisbane, a strong

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8 Eliza Ann Dart, *The Reminiscences of Eliza Ann Dart*, (unpublished, 1946), pp.4-27.

9 Harold W. Dart, *Happenings Historic, Heroic and Hereditary*, p.71.

10 Eliza Ann Dart, pp.1, 30-1; Harold W. Dart, pp.104-7.

11 Eliza Ann Dart, pp.33-8; Harold W. Dart, pp.77-8.

12 Eliza Ann Dart, pp.36-7; Harold W. Dart, pp.77-8.

draw for its closeness now of only 14 kilometres from Eliza Dart's parents' new farm, 'Fair View' at Brookfield.<sup>13</sup> (fig.3).

At Toowong they purchased a two-story grocery and fruit store, with living quarters on the second floor. The business soon returned a good profit. The boom times of the 1880s brought real wealth to the young Darts with the opportunity to invest in property. Renting their store they moved into their newly built large home, 'Woodville' at Indooroopilly with its unaccustomed comfort and large grounds serviced by a Kanaka Pacific Islander.<sup>14</sup>

The good times did not last. 'Woodville' was rented out and a small house purchased at Chapel Hill. Then of necessity, the Darts moved back to Toowong and, while the richer in property holdings, these adaptable victims of the times operated their own store once more.<sup>15</sup>

Eliza and Samuel now had three sons and a daughter, William Thomas, born 1882, Lucinda Mary, born 1884, Samuel Herbert, born 1886, and James Percival born in 1890. On 4 February 1893, a fourth son was born during one of Brisbane's worst known floods. With waters entering the store, Samuel had hastily removed the stock and was absent storing it elsewhere at the time of Raymond's birth. Rising waters forced the midwife to build a fire out of doors on higher ground to heat water to bathe the newly-born and his mother. In great concern the midwife moved swiftly to return to Eliza's bedside only to discover that her sole route of re-entry to the stricken woman's room was to climb through an upstairs window. Once inside, the midwife quickly tied mother and child to the mattress, and with water rising ever higher she floated the two out through the open window to a waiting rowboat manned by helpful neighbours, who rowed the pair to the safety of high ground. Eliza never forgot her rescue by the midwife, the brave and capable Mrs R. T. Jones, mentioning her often in the future.<sup>16</sup> When Raymond grew to manhood and confided his recurrent nightmares of storms and high water to his mother, Eliza always reminded him that the threatening first hours of his life must have been the trigger.<sup>17</sup> (fig.4).

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13 Harold W. Dart, p.79; Eliza Ann Dart, p.43.

14 Eliza Ann Dart, pp.43-6; Harold W. Dart, p.80.

15 Eliza Ann Dart, pp.44-6.

16 Eliza Ann Dart, pp.48-9; Harold W. Dart, p.81.

17 Diana Dart Graham, recorded interview by Kay Smithford, Spartanburg, SC, USA,

The Toowong store with modest living quarters, provided a reasonable living. Though busy, Samuel Dart found time for civic and religious matters, gaining status in both. Serving as a Shire Councillor, his services were recognised by the naming of a street after him in nearby suburban Auchenflower. In the Baptist Church in which faith he had been strictly reared, he became a deacon. However, in 1899, with the children's welfare in mind, the Darts again rented the Toowong store and returned to their Blenheim holdings.<sup>18</sup>

Samuel suffered but one lament in Blenheim: the absence of a Baptist Church (two had already been built by German settlers but in 1892 and 1899 had burned down). A God-fearing man, he joined Eliza's church, the Methodist, one already standing in the tiny community's centre. In this he was elected general visiting superintendent of the Sunday Schools' Circuit, serving also as a Sunday School teacher, enlisting the help of his youngsters William and Lucinda to do likewise.<sup>19</sup>

In such a spiritually united family the fourth son, Raymond, grew and developed. In addition to the study of the Ten Commandments he learned at Sunday School, Raymond Dart was liberally informed by his father of the Baptist ethic of abstinence of alcohol, tobacco, dancing, even card-playing. He remained faithful to all four dictums until his mid-thirties, when the unfortunate victim of intense disquietude, he puffed a soothing pipe. However, rejection of this habit by him was quick when informed by a medical colleague of its dire health consequences; a great relief to his mother who had made known to him her scorn of it. Nevertheless, in due course he would smoke an occasional cigar and also lift his glass (only one on any given occasion) in many a toast during a full and unusually long life.<sup>20</sup>

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24-28 Jan 1994. Diana Dart Graham, Raymond Dart's daughter, is a medical doctor in Florida, USA.

18 Eliza Ann Dart, *The Reminiscences of Eliza Ann Dart*, (unpublished 1946), pp.48,54; Harold W. Dart, *Happenings Historic, Heroic and Hereditary*, p. 81.

19 Eliza Ann Dart, p. 55.

20 Diana Dart Graham interview by Kay Smithford, Spartanburg, SC, USA, 24-28 Jan. 1994; Marjorie Dart, Johannesburg, letter to Frances Wheelhouse, dated 10 Aug. 1973.

On return to Blenheim, Samuel and Eliza had enlarged the slab dwelling, naming it 'Medeba' (Quiet Waters) (fig.5). It would accommodate their growing family; a sixth son had recently been born. Large herds of cattle were now raised: great dairy herds too. Some forty cows demanding to be hand-milked each morning and evening, including school days by the brothers, and Raymond, when old enough, would take his place on a milking stool. Eliza and Lucinda were forever making butter, preparing meals and stitching up every garment worn by the family. Ploughing, planting and harvesting crops were undertaken by the older brothers, as well as repair of farming implements and equipment. In time every member of the Dart family learned to cope with resources at hand and to deal, when necessary, with floods and fires.<sup>21</sup> This training in a wide range of difficult farm tasks, self-reliance in overcoming obstacles and dangers on the land would help Raymond Dart turn to account many an adverse situation then and those to beset him later in life.<sup>22</sup>

One farm job the Dart boys unanimously detested and which, if refused, could bring a beating from their father. It concerned old Darkie, the draught horse. Sometimes he had to be taken into Laidley to be shod at the local blacksmith's. Harold Dart, a younger brother (later the Rev. Dr) remembered how they all hated this long slow 18 kilometres ride. 'Once Ray objected and cheeked his father who chased him across the paddock until his mother intervened. Notwithstanding Ray still had to ride old Darkie to Laidley'.<sup>23</sup>

All work and no play? At first glance this would seem to be so. But the week-ends offered respite. Picnics, creek-swimming, tennis and shooting filled Saturday and 'after church' on Sunday.(fig.6). Because Eliza Dart fostered in her children a love of gathering native plants for transplanting and flowering at 'Medeba', forages into the bush took place in search of these; for Aboriginal tools and gemstones too. The 'pretty stones' found by the children introduced them to the science of geology because their wise and far-seeing mother promptly sent the specimens into the

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21 Eliza Ann Dart, p.55; Raymond A Dart with Dennis Craig ,*Adventures with the Missing Link*, The Institutes Press edn, The Institutes for the Achievement of Human Potential, Philadelphia, Pa., USA, 1967, p.25.

22 R.A.Dart, 'Recollections of a Reluctant Anthropologist', *Journal of Human Evolution*, 2, 1973, pp.417-8.

23 Harold W. Dart, interview by Frances Wheelhouse, Manly, N.S.W., 11 Feb.1972.

Brisbane Museum for identification, thus enhancing the children's knowledge and interest in the world about them.<sup>24</sup>

Mother and mentor, nurse and companion, Eliza struggled to be everything, finally, to all nine of her children (fig.7). That her efforts were recognised and appreciated can be seen in lines her seventh son, Harold W. Dart, born 2 May 1900, penned of her in his book of the family history:

Our mother, Eliza Ann Dart, was a gracious and noble soul. She was kind and loving, most industrious and domesticated, and avid for knowledge. She encouraged us all to be keen on our work, and in our search for education and enlightenment. Above all, she exemplified in her life what she believed in her heart. She imparted to her children, as far as possible, the Christian faith she espoused (fig.8).<sup>25</sup>

'Medeba' proved the hub of the family with relations and friends drawn in to share parties and particularly musical evenings when Eliza played the piano and Samuel his violin. As a child, the fair-headed Eliza had ridden her pony 48 kilometres to take a weekly piano lesson, and had developed into a fine pianist. For his part, Samuel must have delighted in discovering that his talent with the fiddle had been passed on to most of his sons, all playing other musical instruments as well(fig.9).<sup>26</sup>

Lucinda proved the fortunate heir to her mother's gift, and found infinite satisfaction in winning an Associateship of the Trinity College of London Certificate.<sup>27</sup> She played at everybody's whim, and because her brothers all enjoyed good singing voices too, they clustered about the piano at parties. Song and fine pitch and rich sonorous harmonising must have rung out at 'Medeba' most Saturday and Sunday nights! (fig.10). Raymond's appreciation of his sister's musicianship was probably only surpassed by his admiration of her powers of authority in the household during occasional parental absences and that of William, their eldest brother. William would

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24 Eliza Ann Dart, p. 59; Harold W. Dart, p.91; Dart with Craig, *Adventures with the Missing Link*, p.25.

25 Harold W. Dart, p.108.

26 Eliza Ann Dart, pp.27-8; Harold W. Dart interview by F.Wheelhouse, Manly, NSW, 11 Feb. 1972; Harold W. Dart, p.91.

27 Harold W. Dart, p.104; Eliza Ann Dart, p.56; F. Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile*, p.29.

only too soon leave for the United States, while Lucinda remained capably in his stead.<sup>28</sup>

Seven of the Dart boys attended Blenheim State Public School for their primary education, which was 3 kilometres distant. The bigger boys rode bicycles, the smaller ones their ponies.<sup>29</sup> John Leslie, the fifth son remembered how his fair-haired, blue-eyed brother, Raymond, was sometimes involved in fights upon reaching school:

Ray often defended the weak lads in fist fights when bullied by bigger boys over games of marbles. Even though much smaller than the bully-boys he fought, he mostly won such skirmishes.<sup>30</sup>

Even at such a young age Raymond Dart is shown to have had concern for fair play and that he was quite prepared to defend it.

As at Toowong, Samuel Dart continued to perform public duties, serving as a school committeeman and trustee at the Blenheim Public School; also as Councillor of the Laidley Shire in which the village of Blenheim stood. On Council, he aided in the establishment of the Laidley District Hospital and the Gatton High School.<sup>31</sup> Examples of the parents' community service and the mother's untiring devotion and guidance would not be lost on their children. Harold would later write of his father as 'a good, upright, honest, intelligent and industrious man; somewhat strict, but loving, kind and patient in suffering'.<sup>32</sup> Samuel was to endure much ill health and later in life, amputation of a leg.<sup>33</sup>

That Samuel Dart was 'somewhat strict' might appear as an understatement in the light of today's attitude towards corporal punishment for children. Like many a parent of his generation he obviously believed with Samuel Butler that to spare the rod did indeed spoil the child.<sup>34</sup> When

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28 Eliza Ann Dart, p.61.

29 Harold W. Dart, p.90.

30 John Leslie Dart, interview by F. Wheelhouse, Surfers Paradise, Qld., 20 Feb. 1977.

31 Blenheim Centenary Souvenir Book Committee, *Blenheim State School Centenary 1879-1979 Souvenir Booklet*, Blenheim, 1979, p 88; Harold W. Dart, p. 84.

32 Harold W. Dart, p.104.

33 Eliza Ann Dart, *The Reminiscences of Eliza Ann Dart*, (unpublished, 1946),.p. 53. 63.

34 Samuel Butler, *Hudibras* pt. 2 (1664) canto 1. 1. 843.

he deemed it necessary, judicious use of the strap was inflicted on all eight of his sons.<sup>35</sup>

Keen to ensure for his sons an education equal to his own at the Brisbane Grammar School, Samuel Dart sent four of the boys to the Ipswich Grammar School, the first and oldest in Queensland, and the only available secondary school within a radius of 50 kilometres<sup>36</sup> (fig.11). Dart was twelve years old when he won a scholarship to this private school, and in so doing helped with the costly fees demanded for education of this high standard.<sup>37</sup>

On 5 February, the day after his thirteenth birthday in 1906, Raymond Dart became the 1102<sup>nd</sup> student to enrol since the school's inception in 1863.<sup>38</sup> (fig.12). In her own 'Reminiscences', Eliza refers to her fourth son as a 'very delicate child', and reports that when living at Toowong (to the age of six) he was pulled around in a hand-made cart by his elder brothers during family walks. She lists Raymond's boyhood ailments as pneumonia, measles, scarlet and typhoid fevers; eye infections and numerous other ailments. From these, she points out, Raymond took longer to recover than she herself or other members of the family, and that on one occasion he was not expected to survive.<sup>39</sup> Because of her son's frailty, Eliza Dart had arranged for Raymond to board outside school during his early days at Ipswich. As much concerned, perhaps, about his spiritual welfare as his health - Ipswich Grammar School was non-denominational - Eliza placed him in board with the widow of a Baptist minister.<sup>40</sup>

In manhood, Dart held the opinion that his childhood complaints probably triggered a lifelong sinus problem. He refers to these ailments, however, only as 'the feebleness of my infancy and early childhood', and 'having little physical dexterity, I inherited the opportunity and a passion for learning and books'.<sup>41</sup>

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35 Bruce Dart, interview by F. Wheelhouse, Pymble, NSW., 10 May 1995. Bruce Dart is one of the sons of the Rev. Dr Harold Dart, and as was his father, also a Baptist Minister in Sydney.

36 Harold W. Dart, p. 84.

37 Eliza Ann Dart, p.58

38 Ipswich Grammar School Register 1862-1926, (no page number).

39 Eliza Ann Dart, pp.50,54.

40 *ibid.*, p.58.

41 Raymond A. Dart, 'Nasal Hygiene - A Contribution to the Prevention and Control of Nasal Infection', *The Leech*, June 1936, pp.4-18; 'Recollections of a Reluctant Anthropologist', *Journal of Human Evolution*, 2, 1973, p.418.

Ipswich Grammar School had enjoyed a proud history since its Gothic revival-styled stone building first opened on 7 October 1863 after enactment of the Grammar Schools' Act by Queensland's first Legislature.<sup>42</sup> Stuart Hawthorne, the first headmaster, drawn from a coterie of twelve brilliant Australian and overseas graduates, served from 1863-1868.<sup>43</sup> Prior to Raymond Dart's enrolment, another two headmasters, both MAs had held office: John Macrea from 1869-1875, and Donald Cameron from 1875-1900. When Dart commenced his studies there, a fourth headmaster presided, one, C. A. Flint.<sup>44</sup>

Headmaster Flint had been educated at the University of Sydney, gaining his BA in 1882 (fig.13). Both a University and Barker Scholar, he achieved the highest honours of his year in mathematics. Gaining his MA in 1884, he engaged in a highly successful career as an analytical chemist with the Colonial Sugar Refining Company. An educational career followed to which he was lured by teaching science, French and mathematics on behalf of the absent Headmaster of Brisbane Grammar School. Newington College in Sydney next benefited by his talents over seven years, then The Kings School at Parramatta for two-and-a-half years. Between 1895 and 1900 he became Rector of Coerwull Academy at Bowenfels near Lithgow, New South Wales.<sup>45</sup> Now an eminent scholar and educator, he was next appointed Headmaster of Ipswich Grammar School, serving from 1901 to 1907.<sup>46</sup>

Thirteen-years-old Raymond Dart took in Headmaster Flint's departing advice to his students, 'Try and cultivate every virtue; scorn all forms of pretence, and so live, that neither you nor the world will regret your entrance into it'.<sup>47</sup> Flint also contributed the school badge, and was responsible for the formation of the Old Boys' Association, formed on 25 July

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42 Joseph Henry Allsopp, *A Centenary History of the Ipswich Grammar School 1863-1963*, Brisbane School Staff and Old Boy of Ipswich Grammar School, Ipswich, 1963, p.28; *Ipswich Grammar School Magazine Centenary Issue 1863-1963*, pp.2-13.

43 Allsopp, pp. 23-24; *IGSMCI 1863-1963*, pp. 12-13.

44 Allsopp, pp.30-46.

45 Allsopp, p.46; *The Coerwull Magazine: A Quarterly Chronicle of Coerwull Academy, Lithgow*, vol. 1, new series no.1, part 2, 26 Sept. 1895, p.2; Peter Yeend, Archivist, The King's School, letters to F. Wheelhouse, 2 Dec. 1994 and 10 Jan. 1995.

46 Allsopp, p.46.

47 *ibid.*, p.46.



1907.<sup>48</sup> After a competition to decide it, Flint introduced the school motto, 'Labore et Honore'.<sup>49</sup> Headmaster Flint was also known to state, 'Whatever you do, dare all except dishonour'.<sup>50</sup> Ex-students mentioned that this philosophy stuck with many of the boys as did the school motto, and one, Wilfred Phillips wrote that the motto 'goes to the very foundation of our manhood. It expresses the aim of all true, self-absorbing and self-realising effort. It is a motto that has stood the test of time...and I venture to say that those who have lived in accordance with it have proved its value'.<sup>51</sup> One, no doubt to affirm such an axiom would be Raymond Dart.

At the outset of Raymond Dart's admission to Ipswich Grammar School he found to his satisfaction, that numerous extra-curricular activities existed, for example, to leave one's name on the high church tower steps. The first signatory, he learned had left his mark when the school opened back in 1863. Though out of bounds for many years, certain boys nevertheless climbed up over the roof in the dead of night to leave their names on the tower's stonework. In later years the ban was lifted, and in keeping with tradition, R. A. Dart there scored his name in bold hand.<sup>52</sup> The school came to cherish this area as part of its heritage, bearing as it did so many names of boys later to become famous. Among these and perhaps the best-known was J. J. C. Bradfield, the brilliant engineer-designer of the Sydney Harbour and Brisbane Storey bridges and scores of other projects. Sadly someone without a sense of history obliterated these names during a repaint, though fortunately, this writer obtained a photograph of the R. A. Dart signature for posterity.<sup>53</sup> (fig.14).

Of those extra-curricular activities, some were lawful; others not. Cockfighting used to take place on the Headmaster's very own lawn, that is, until discovered. The place for settling disputes lay behind an old playshed. Here many an eye was blackened, lips split, and noses broken. The usual

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48 *IGSMCI 1863-1963*, p.13; Allsopp, p.46.

49 *IGSMCI 1863-1963*, p.13.

50 R. W. Shand, 'Reminiscences by Old Boys', ch 10, in Allsopp, p.111.

51 Wilfred Phillips, 'Looking Back', ch 10, in Allsopp, p.114.

52 Allsopp, p.125; H. E. Neale letter to F. Wheelhouse, 7 June 1971; Frances Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile*, p.25.

53 R.W. Shand in Allsopp, p.111; Allsopp, p.36; Frances Wheelhouse, p.25; Igor Lapa, Headmaster, Ipswich Grammar School, interview by F. Wheelhouse, 1 Apr. 1992.

practical jokes took place such as setting off an alarm clock in the middle of a boring algebra lesson.<sup>54</sup>

Raymond Dart did not shine on the sportsfield owing to his small stature. His only victory at school was to win a 2 mile (3 km) walking race after being given a considerable lead. But Raymond worked hard at his studies during his first year, passing his examinations reasonably well, and taking part in the final prize-giving function presided over by the State Governor. As a special item, Raymond sang *Dulce Domum*, for which he received an unexpected prize.<sup>55</sup> He would develop as a gifted singer possessing a rich baritone voice.

In Raymond's second year at Ipswich Grammar School, Headmaster Flint was replaced by B. G. Lawrance, MA, a man who emphasised scholarship. (fig.13). More than strict, he rarely gave exemptions from the curriculum. He introduced weekly examinations designed to give students continual incentives to study. He regarded the classics and modern languages as most important and during his term of office there was an increase in the quota of those taking physics and chemistry. He re-introduced the School Cadet Corps, began the school magazine, and encouraged sports as a means of building character. Importantly he began the Honour Board (an idea initiated by the Old Boys' Association), and on 10 December 1908 invited Lord Chelmsford, the State Governor, to unveil it. Lawrance imparted Christian principles to the students and established the Student Christian Movement, of which he was president.<sup>56</sup> Later, he presided as a member of the University of Queensland Council.<sup>57</sup>

R. A. Kerr, MA, BSc, who served as assistant to both Flint and Lawrance, was particularly admired by Raymond. (fig.13). He was struck not only by the man's intellectual vitality but the intensity of his nature, and his deep-seated strength. Kerr probably exerted as much influence on Raymond's developing attitudes as the two headmasters.<sup>58</sup> Considered an ideal educator, Kerr was an outstanding scholar in the humanities,

54 Wilfred Phillips in Allsopp, p.115.

55 *IGSACTA*, Obituary, vol. 10, July 1989, p.12; Eliza Ann Dart, *The Reminiscences of Eliza Dart*, (unpublished, 1946), p55.

56 Allsopp, 46-50; 'Out of the Past', *IGSACTA*, vol. 5 Apl. 1984, p.6.

57 *Ipswich Grammar School Magazine Centenary Issue 1863-1963*, p.13.

58 Allsopp, p.48; Obituary, *IGSACTA*, vol. 10, July 1989, p.12.

mathematics and classics.<sup>59</sup> As the historian Joseph Allsopp noted, Kerr believed education to be 'concerned with the spirit of men'. Allsopp remarked that Kerr desired 'not only scholars but men having graciousness of mind and character, men who were interested in life, people, justice and in the world's problems, and who would be willing to take a share in all that was going, men who were not only efficient and successful, but also creative'.<sup>60</sup> Young Dart absorbed much of this philosophy - in the adult man, it became manifest.

Kerr strongly advocated the study of languages, with a preference for Greek, Latin and German and placed great value on mathematics, science, history and geography. Ex-student Sir Llewellyn Edwards, (a medical practitioner and one-time State Deputy Premier of Queensland) mentioned that Kerr 'was a respected man, a man who was feared, not because of his fearsome nature, but because of his demands for respect, integrity and understanding'.<sup>61</sup> Ever compassionate, Kerr's aid to students facing difficulties was well known.<sup>62</sup>

Raymond Dart went home from school each week-end to assist on the farm. Because of his small stature he escaped some of the heavier duties undertaken by his bigger brothers, such as ploughing, according to season, and harvesting of crops. His younger brother John Leslie commented, 'Ray wasn't keen on ploughing - he'd rather dig with a shovel than harness a horse'.<sup>63</sup> Amongst his lighter duties was cleaning out the fowl houses. When, one day, his brothers returned from the field to find this work neglected and that Raymond had spent the time dissecting a rooster, other duties were found for him.<sup>64</sup> Would this be the burgeoning of the future anatomist?

In addition to his farm holding, Samuel Dart had opened general stores in Laidley and Forest Hill (fig.15). Many German settlers came to trade with him, some among them becoming his firm friends. Thus in 1907

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59 Allsopp, pp.54-55; *Ipswich Grammar School Centenary Issue 1863-1963*, p.13.

60 Allsopp, p.54.

61 *IGSACTA*, vol.1, Jan. 1980, p.4.

62 Allan Morrison, in Allsopp, p.112; *IGSACTA*, vol. 1 Jan, 1980, p.4.

63 John Leslie Dart, interview by F. Wheelhouse, Surfers Paradise, Queensland, 20 Feb.1977.

64 Diana Dart Graham, interview by Kay Smithford, Spartanburg, SC, USA, 22-24 Jan 1994.

when the German settlers achieved building their third Baptist Church in Blenheim offering as well as German morning services, English evening services, Samuel Dart decided to return to the fold of his Baptist faith. On 3 March 1907 he and his daughter, Lucinda, became the first Australians to be baptised in this new church. Samuel became a lay preacher. Later other members of his family joined in church life, his wife and daughter taking turns playing the organ while his sons performed as chorists and band instrumentalists<sup>65</sup> (fig.9). Once grown up, Raymond always carried two Bibles around with him, one printed in English, the other in German. He could, and often did, recite chapter and verse from Scripture in either language.<sup>66</sup>

It can be observed, therefore, that Raymond spent his most impressionable years, the adolescent, under the influence of three strong persuasions: a highly spiritual atmosphere at home; the demand by three eminent schoolmasters for academic excellence, and a strict regime exercised both in the household and at Ipswich Grammar School. Such sound grounding to a start in life proved invaluable to his character building.

While Raymond Dart had struggled to keep up in class during his first two years, his progress improved and in 1908 he successfully passed the Sydney Junior Examination, the only external exam available at that time, and supervised locally. Raymond also rated a mention upon achieving second place in the language groups, including French, German, Latin, and Greek.<sup>67</sup>

Unfortunately the health of the youth, now fifteen years old, failed again. He fell ill immediately after his examinations, and had to be cared for at school until well enough to travel home. His mother put this illness down to overstudy.<sup>68</sup>

The year 1909 at Ipswich began poorly for Raymond, but he carried on. While his second term's report read, 'Very fair', he won on his third,

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65 Laidley Baptist Church Centenary Committee, *100 Years of Baptist Witness in Blenheim and Laidley ; 1882-1982*, Laidley, 1982, pp.1-13; Harold W. Dart, p.97; Eliza Ann Dart, pp.60-61.

66 Diana Dart Graham, interview by Kay Smithford, Spartanburg, SC., USA, May 1995.

67 *Ipswich Grammar School Magazine*, n.s. vol.1, no. 4, Nov. 1909, pp. 12-13.

68 Eliza Ann Dart, p.62.

'Working well, and should gain some ground next term as he seems to be getting a better grip on his subjects now'. He did not disappoint, winning at the fourth term's conclusion, 'a distinct advance.'<sup>69</sup>

A scheme of authority in a family as large as the Darts necessarily operated, a demand that when needed each member assumed his or her responsibility. When present, the parents were in charge. When absent, the eldest son would take over, and so on down the line. Only the father could mete out punishment.<sup>70</sup> Raymond's turn to assume authority came after his end of year's exams in 1909, and when his parents and older siblings were away for Christmas. Passing without mishap, the entire family then gathered at Manly on the Queensland coast for the remainder of the long summer holidays. It is interesting to note that while most of the Darts drove the 112 kilometres to Manly in their horse-drawn waggonette, brothers Raymond and Percy rode the distance on their bicycles. Although Eliza worried over Raymond's physical ability to withstand the ride, he proved equal to the test.<sup>71</sup> He was growing stronger.

Even with his additional farm and family responsibilities in 1910; his final and most important year at high school, the year of his Sydney Seniors Examination, Raymond strove - and scored characteristically. His parents had left on 16 March on a six-months' world tour. They would attend their eldest son's ordination as a Baptist minister in America and visit the countries of their forebears - England, Scotland and Ireland. In their absence Raymond shouldered extra work on the farm at week-ends and helped care for the younger children when they came home from Laidley where they stayed during the week.<sup>72</sup>

Dart's progress at school in his final year proved interesting. His first term report showed 'an all-round improvement'; second term read, 'Good. Playful at times, but has done well and made some improvement'. Of a third term he was said to have shown 'some improvement; earnest, but does not always apply his efforts in the best way'. Comments on his fourth term's work are in part, somewhat pejorative. 'Good. His [Sydney] Senior pass was

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69 Masters' Register, Ipswich Grammar School, 1910, p.21.

70 Harold W. Dart interview by F. Wheelhouse, Manly, NSW, 11 Feb. 1972.

71 Eliza Ann Dart, *The Reminiscences of Eliza Ann Dart*, (unpublished, 1946), p.63.

72 *ibid.*, pp. 63-64.

very satisfactory. I think he is hardly ripe yet for University work and life'.<sup>73</sup> The remarks in the last sentence, penned as they were for posterity, must have shortly embarrassed their author. Dart's Sydney Seniors pass qualified him to matriculate to the University of Sydney, but late in that same year he sat for the newly-introduced entrance examination for the first University of Queensland and achieved one of the twenty open scholarships offered by the Queensland Government. With this scholarship he, with four other Ipswich Grammar School pupils gained prestige for their school, ranking in the following order: R. W. H. Mellor 4th position in the state; W. J. Meyer, 9th, C. A. Foggon, 10th, E. M. H. Fischer, 14th and R. A. Dart, 17th.<sup>74</sup>

In addition to the mass of school work during his years at Ipswich Grammar School, Raymond and his classmates had also trained as members of the School's Cadet Corps. Some achieved non-commissioned officer rating, Raymond's rank that of Corporal. All were rated as excellent rifle shots.<sup>75</sup>

Notwithstanding some of his masters' earlier comments, Dart would soon prove that he was indeed ready for University and life. Eligible for either Sydney or Queensland University, he believed he knew just where he was going. While at Ipswich Grammar School he had often expressed his intention to study medicine at the University of Sydney and become a medical missionary and perhaps go to China. 'Ambition at the end of my Queensland school career was hastening me to Sydney in 1911 to qualify medically'.<sup>76</sup> Dart later commented that such cherished plans were dashed when his father adjudged the scholarship to the University of Queensland as the better academic path to follow.<sup>77</sup>

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73 Masters' Register Ipswich Grammar School, 1910, p.21.

74 *IGSM*, vol. 8, no.1, June 1911, pp.17-18; Allsopp, *A Centenary History of the Ipswich Grammar School 1863-1963*, p.106, (uses spelling Fisher though on p.51, spelling is Fischer); R. A. Dart, 'Recollections of a Reluctant Anthropologist', *Journal of Human Evolution*, 2, 1973, p.418; Phillip V. Tobias, *Dart, Taung and the 'Missing Link'*, The Institute for the Study of Man in Africa, Johannesburg, 1984 p.2.

75 *IGSM*, vol. 8, no. 1, June 1911, p.10.

76 R. A. Dart, 'Recollections of a Reluctant Anthropologist', *Journal of Human Evolution*, 2, 1973, p.418; Dart with Craig, *Adventures with the Missing Link*, p.25; Harold W. Dart, *Happenings Historic, Heroic and Hereditary*, p.100.

77 R. A. Dart, 'Recollections of a Reluctant Anthropologist', *Journal of Human Evolution*, 2, 1973, p.418.

Bitterly disappointed over this paternal decision, young Dart later came to regard it as invaluable. 'Against my will but in accord with my father's judgment, I found the scholastic side of this pioneer year at the newly-founded university so congenial that I stayed until I had graduated'.<sup>78</sup>

In years to come Raymond Dart's perspective on his boyhood and academic days were reflected in a letter:

The distant fireworks of Queen Victoria's Diamond Jubilee celebrations in 1897, our transference to Blenheim and early life there synchronised with the South African War (1899-1902), the devastating drought of 1900-03 and the coming of a new century in 1900, the Federation of Australia in January 1901 and Queen Victoria's death and the deferment of Edward VII's coronation by his appendicitis operation and the first prediction of a comet's periodic return and its realisation in Halley's comet in 1910, and my mother's and father's world-round trip by boat and railway in 1911 [1910] as well as the coming of wireless, trains replacing horse-drawn buses, telephones, motor cars and aeroplanes. These were the exciting things both far off and as yet inaccessible that one recalls as colouring the years of schooling.<sup>79</sup>

Such were the events that stirred the Australian youth's imagination as he went about his daily life in Queensland; reacting, too, to the numerous circumstances of strict upbringing, the training that was inexorably moulding his character. His parental and scholastic disciplines inculcated both the Christian and the work ethics within him, Raymond Dart reacted to the strong core of family love so vibrant in the Dart household. An emotion that would certainly tend to temper his future judgment, protect him from a brooding bitterness wrought by the injustices to be imposed upon him in the future stretching ahead. He emerged from home and school studious, fair-minded, happy, playful and musical. He was equipped to shoulder responsibility and he had demonstrated that he possessed academic ability.

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78 *ibid.*, p.418.

79 Raymond A. Dart letter to F. Wheelhouse, 22 Feb. 1974.

## CHAPTER 2

### UNIVERSITY AND ARMY DAYS

#### University of Queensland

Raymond Dart's parents, Samuel and Eliza, could not have perceived how the insistence that their son attend the University of Queensland instead of that of Sydney would rapidly change his outlook, that the intellectual transition would set him on a highly contentious path to world fame. Nor did Dart himself conceive as he matriculated into the Faculty of Science at the new University of Queensland on 14 March 1911<sup>1</sup> that he stood on the threshold of conversion. Later he would explain:

I was born in Brisbane and raised in a devout Methodist and Baptist family environment, sharing gladly also the fundamentalist philosophy of Plymouth Brethren family friends. My first frank confrontation with evolutionary ideas was in 1911 as a biology student in the University of Queensland, to which my parents had sent me against my wishes because I had happened to win the 17<sup>th</sup> of its 20 inaugural entrance scholarships. I hated the idea of starting medical study in a new and then non-medical university. But such was life at 20 [18] that by year's end I had become so enthralled by the place and the friends found there, that I decided to stay until I had the science degree however far medical status might be deferred.<sup>2</sup>

To his younger brother, Harold, Raymond would reveal that his new knowledge soon discovered 'the discrepancies between Fundamentalism and the facts'.<sup>3</sup>

From the first moment, university life excited Raymond Dart. He delighted to discover that in his first year of Science he could take a range of subjects in addition to those compulsory, 'not because of the innate love of the subjects, but because of what they opened up. For example, I went to geology because of the wonderful field trips over the countryside'.<sup>4</sup>

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- 1 Glenda I. Acland, University Archivist and Co-ordinator Records Management, University of Queensland, letter to Frances Wheelhouse, 3 Mar. 1993.
  - 2 Raymond A. Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith, *Mankind*, vol. 8, no. 3, June 1972, p.171.
  - 3 Harold W. Dart, *Happenings Historic, Heroic and Hereditary*, the Author, Sydney, 1981, p.110.
  - 4 Raymond A. Dart, interview by F. Wheelhouse, Johannesburg, South Africa, 1 Mar. 1973.



Memory carried him back to the conviviality of his fellow students during field work. How joyous and grand it was to get up to Cunningham's Gap through the Great Dividing Range. 'I suppose', he reflected, 'there is somewhere or other the songs that we sang, because there were some remarkable fellow students who composed the songs in the field, and we all sang them'.<sup>5</sup> Another younger brother, Leslie, recalled how Ray could get his fellow undergraduates to sing along with him at the drop of a hat.<sup>6</sup>

The text by Scott, *An Introduction to Geology*, now became Raymond's Bible; his mother's also, her appetite whetted by the children's searching for gemstones. Although Eliza never wavered in her religious faith and strict biblical teachings concerning, say, the age of the planet, she nevertheless kept pace happily and conscientiously with Raymond's study of geology. She did so in the only available time - in bed after a full day's work, and reading by candlelight.<sup>7</sup>

Her son considered this quite remarkable. Not only because of her sparse schooling when, as a child, grown men and women hungering for learning had been included in Eliza's classes, but on still another count, as Dart reminded. His mother boiled the whole family wash in a huge copper, so big that it held all the sheets and clothes for her eight boys and a girl. Besides, it was a constant daily chore. 'Women', Dart concluded, 'were just slaves for the whole family in those days'.<sup>8</sup>

Young Dart readily appreciated his own advantages of scholarships to high school and university in the first instance to cover costly tuition fees and board, and at the university, tuition fees only, though for the whole of the three-year period. Money for accommodation must be met by his family.<sup>9</sup> He would have to work hard and get through his studies in this time.

In those days it was mandatory for undergraduates to wear academic

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5 *ibid.*

6 John Leslie Dart, interview by F. Wheelhouse, Surfers Paradise, Queensland, 20 Feb. 1975.

7 Raymond A. Dart, interview by F. Wheelhouse, Johannesburg, 1 Mar. 1973.; William Berryman Scott, *An Introduction to Geology*, The Macmillan Co. New York, 1900.

8 Raymond A. Dart interview by F. Wheelhouse, Johannesburg, 1 Mar. 1973.

9 Glenda I. Acland, University Archivist, University of Queensland letter to F. Wheelhouse, 3 Mar. 1993.

gowns when attending lectures, when within the University, and at University ceremonies. None would wear his gown more proudly than Raymond Dart, especially at the inaugural ceremony of the opening of the University of Queensland on 1 June 1911, in the Exhibition Hall, Brisbane.<sup>10</sup> During these celebrations a photograph (fig. 16) captured the first undergraduates outside Old Government House, the building dedicated for use by the University, and now the National Trust Headquarters.<sup>11</sup> (fig. 16). In later years it must have delighted Raymond Dart to learn that the land on which his Uncle William had first established a sugar-cane mill beside the Brisbane River at St Lucia, would afterwards become part of the University of Queensland's main campus.<sup>12</sup> Uncle William's sugar mill had eventually become a victim of the devastating Brisbane flood of 1893, during which Raymond had made his precarious entrance into this world.<sup>13</sup>

During his three-year term of study at the University of Queensland, Raymond Dart was fortunate in securing 'digs' at the Young Men's Christian Association Hostel in Brisbane.<sup>14</sup> Meanwhile, not only did he distinguish himself academically, but entering the sporting field at last he started out successfully. His stamina had been improving from physical challenges of tougher farm duties and had not been found wanting since his bicycle ride of 112 kilometres to Manly on the coast two years previously. His health had improved and now of more robust physique he was selected a representative of the University of Queensland Rugby Union team, though, no doubt, to the utter disapproval of his father.<sup>15</sup> Samuel Dart had forbidden his sons to join either cricket or football clubs until they were at least twenty-one years of age, fearful lest they be tempted to alcohol.<sup>16</sup> For Raymond at eighteen years, the honour of selection outweighed his father's ban. With all of the pent-up desire of childhood to enter sports, Raymond Dart

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- 10 Nicole Le Maistre, Assistant Archivist, University of Queensland, quoting [UQA S 8 Printed copies of Senate Minutes, 1910-1912], letter to F. Wheelhouse, 15 Apr. 1993.
- 11 Nicole Le Maistre, letter to F. Wheelhouse, 15 Apr. 1993 and quoting [UQA 177 Photographs of Key People Associated with the University 1911 - P791 First Undergraduates 1911. Photograph provided by Miss M Rich].
- 12 Eliza Ann Dart, *The Reminiscences of Eliza Ann Dart*, (unpublished 1946), p. 31; Harold W. Dart, *Happenings Historic, Heroic and Hereditary* pp.71-72.
- 13 Eliza Ann Dart, p.48; Harold W. Dart, p. 72.
- 14 University of Queensland Archives, S157 / 3 Microfilm of Student Cards, pre-1959, Dart, R. A.
- 15 *Ipswich Grammar School Magazine*, n.s., vol. 10, no. 17, June 1925, p.19.
- 16 Harold W. Dart, interview by F. Wheelhouse, 11 Feb. 1972; Harold W. Dart, p.90.

thoroughly enjoyed playing rugby - until an accident. One day during a match against the Brisbane Grammar School he broke his left arm, and decided to give up football. Some time later he broke the same limb in a fall from his bicycle. Upon recovery he decided to divert his sporting participation to swimming, tennis and shooting.<sup>17</sup>

In addition to geology, Raymond Dart became enthralled with other subjects in his course at the University of Queensland. There he said his eyes were opened to the wonders of science, zoology in particular.<sup>18</sup> His interest in this subject deepened, and during the evening of 21 August 1913, and before an audience of seventeen members of the Queensland Naturalists' Society, he read his first scientific paper. The event was briefly reported in the Society's journal: 'Mr R. A. Dart delivered an interesting lecture on "Foraminifera" [now *Foraminiferida* - unicellular organisms encased within a test or shell], illustrating his remarks by means of lantern slides and diagrams'.<sup>19</sup> This contribution must have gained him membership because on 30 August 1913, Raymond Dart was elected a member of the Queensland Naturalists' Society at the Annual Botanical Meeting.<sup>20</sup>

Now in the final year of his science course, Raymond Dart contributed further to the Queensland Naturalists' Society with a talk on 20 September 1913 to twenty-six members on the general biology he had studied at Russell Island while there on an excursion.<sup>21</sup> He often spoke to his brother, John Leslie, of the exciting discoveries made on this and other island excursions, revealing to him also his delight in riding the turtles.<sup>22</sup> He was developing mastery of scholarly work both written and oral. Unfolding also was the trait of tempering his studies with humour and song - a useful release to any of his tensions.

When Raymond returned home on occasional week-ends to visit and also to work on the farm, he found more than one familiar face missing from

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17 Raymond A. Dart letter to F. Wheelhouse, 22 Feb. 1974.

18 Dart with Craig, *Adventures with the Missing Link*, pp.25-26.

19 *The Queensland Naturalist*, Evening Meeting, 21 Aug. 1913, vol. 1, Dec. 1913, p.264; H.J.Deacon, University of Stellenbosch, South Africa, letter to R. A. Dart, 6 Mar. 1985.

20 *The Queensland Naturalist*, Dec. 1913, p.265.

21 *ibid.*, p.265.

22 John Leslie Dart interview by F. Wheelhouse, 20 Feb. 1975.

his domestic world. His second eldest brother, Samuel Herbert, had left for the United States in 1911 to study veterinary science, and like his brother William Thomas, Samuel would never again return to Australia on a permanent basis; he would remain to work in America for life. Raymond's sister, Lucinda, and brother, Percy, had left on a world tour in 1913. Of these times his younger brother, Harold, was to make note:

The period of childhood too quickly passed, school days gave place to days of sterner reality. Almost imperceptibly, young manhood was making demands upon us. As a family, we were beginning to branch out in training for our careers in life.<sup>23</sup>

In 1913 Raymond Dart completed his Bachelor of Science Degree with Honours in Biology, and in so doing made history not only as being among the first Foundation Scholars to graduate from the University, but as the first student to gain honours.<sup>24</sup> Of the degrees gained by its ex-students the Ipswich Grammar School was proud to record, 'Among those who gained this honour were six Ipswich Grammar School old boys. One cannot help feeling proud when one realises the honour they have brought the school'.<sup>25</sup>

Raymond Dart would remember gratefully his excellent lecturers (fig. 17) at the University of Queensland, especially Henry Caselli Richards, MSc, who aroused his interest in geology. A burning desire to gain ever more knowledge of biology was stimulated by Thomas Harvey Johnston, MA; DSc.<sup>26</sup> 'From the first, provision was made for an honours course quite distinct from but supplementary to the three-year pass work undertaken by the department'.<sup>27</sup> Both these lecturers employed active research in their laboratories and involved students in projects. Both had impressive earlier university backgrounds. Dr Johnston, born in Sydney on 9 December 1881,

23 Harold W. Dart interview by F. Wheelhouse 11 Feb. 1972.

24 UQA S246N The University of Queensland 1910-1922 (Published by Authority of Senate, James Cumming, Govt. Printer), 1923), Professors and Lectures of the University, Professor T. H. Johnston, pp.35-37; Judith Gibson, Archivist, The University of Queensland, letter to F. Wheelhouse, 12 Mar. 1996; UQA 157 / 3 Microfilm of Student Cards pre-1959, Dart, R.A.

25 *Ipswich Grammar School Magazine*, vol. 6, no. 2, June 1914, p.72.

26 University of Queensland Archives S 250, Report of the Inaugural Ceremony (held at the Exhibition Hall, Brisbane, Thurs.1 June 1911); Raymond A. Dart, letter to F. Wheelhouse, 3 Feb. 1974; UQA S247 The University of Queensland 1910-1935 (Pub. by Authority of the Senate. Biggs & Co Pty Ltd, Brisbane 1935). Appendix C. Officers of the University. Professor H. C. Richards.

27 UQA S246N The University of Queensland, 1910-1922, pp.35-37; Judith Gibson, letter to F Wheelhouse, 12 Mar. 1996.

matriculated to the University of Sydney at the age of fifteen. He postponed his entrance there while teaching, and in 1902 enrolled in both Arts and Science and gained these degrees while teaching at Fort Street High School in Sydney during 1903-1906. He then lectured in zoology and physiology in 1907-1908 at the Sydney Technical College and became Assistant Director of the Bathurst Technical College in 1908. He was Assistant Microbiologist to the New South Wales Government, gaining his DSc in 1911. Johnston was known for his meticulously prepared and lavishly illustrated lectures with coloured shadings. Field trips he considered essential and many were organised to Caloundra, Masthead and the North West Islands of the Great Barrier Reef for students, and on which he included his wife and children. He encouraged bright students to proceed to postgraduate degrees, Raymond Dart being one of the first. His contributions to Science were considerable, including his brilliant work using the *Cactoblastis* (wild cochineal insect from South America) to destroy the prickly pear cactus pest in Queensland.<sup>28</sup>

Henry Caselli Richards likewise was most popular with students and also had an impressive university background. Born 16 December 1884, he gained his BSc. at Melbourne University in 1907, his MSc in 1909 and his DSc in 1915. He played an active role in administration and development of the University of Queensland in addition to his research and heavy teaching load. Later he became Dean of the Faculty of Science, was President of the Professorial Board, a member of the Senate and Deputy Vice-Chancellor. He played a vital role on the Great Barrier Reef Committee, was Chairman of the Royal Society of Queensland and served on many other important scientific bodies. His particular interest was in the Fine Arts. He was described as a man who 'steadfastly stood for ideals and principles' - his kindly nature and his courtesy to young staff and students were well known.<sup>29</sup>

Dart's lecturers would recall his assiduous application on all counts, and particularly his practical books with their meticulously drawn and accurate representations of specimens. Dart himself would keep and treasure these books, and from which much later his own children would

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28 Helen Gregory, *Vivant Professores. Distinguished Members of the University of Queensland 1910-1940*, University of Queensland Library, St. Lucia, 1987, pp.59-62.

29 *ibid.*, pp.122-126.

also gain knowledge and delight in their father's artistry.<sup>30</sup>

His studies at the University of Queensland, Dart realised, had not only been worthwhile but extremely valuable. His understanding of science had expanded in great measure; had taken him across the border from the fundamentalist concept into a new reality, the expanding field of evolution.<sup>31</sup> Lost to Dart now was the theologian's interpretation of Creation between 4000 and 6000 years previously, arrived at through totting up genealogies in the Old Testament in the book of Genesis or by the calculations of the Cambridge don, John Lightfoot, who claimed that Creation occurred at the beginning of the academic year at 9 a.m. on 23 October 4004BC.<sup>32</sup>

Dart though, would nevertheless abide by the Ten Commandments of his faith. What would not be lost on Raymond Dart was the sheer range of Darwin's treatment of natural selection and its implications in his work, *The Origin of Species*, a scientific approach whereby ancestral species gave rise to descendants which would not exactly resemble them; an outlook so vexatious to many when expounded in 1859.

Dart would avidly imbibe Darwin's ideas and meanings; would appreciate Darwin's acknowledgment of other naturalists' and scientists' ground-breaking clues to the mystery of life's origins, Buffon, Lamarck and Patrick Matthew exemplified. Dart would note how Darwin harmonised with some of their ideas in his own writings, and his thoughtful recognition of naturalist Alfred Russel Wallace's independently conceived theory of evolution of species. Although presented more than a year earlier, Wallace's 'On the Tendency of Varieties to Depart Indefinitely from the Original Type', did not gain as great a credit as Darwin's *The Origin of Species*, mainly because Darwin provided greater detail and more evidence, and because of his promotion of the theory's acceptance. The first edition of *The Origin of Species*, published as an Abstract on 24 November 1859, sold out immediately, and by 1872 had run to six editions.<sup>33</sup>

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30 Diana Dart Graham interview by Kay Smithford, Spartanburg, SC., USA, 14-18 Jan. 1994.

31 Harold W. Dart, p.110.

32 Ian Tattersall, *The Fossil Trail: How We Know What We Think We Know About Human Evolution*, Oxford University Press, 1995, p.4.

33 Charles Darwin, *The Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, John Murray, London, 1901, pp.xiii-xxi; *The New Encyclopædia Britannica*, 1994, 15th edn, vol. 12,

Powerfully rich ideas in others of Darwin's works, *The Variation in Animals and Plants Under Domestication* (1868) and *The Descent of Man, and Selection in Relation to Sex* (1871), were absorbed by Dart and from those of other resourceful scientists. How important would this absorption prove? How great an influence on Dart was Darwin's prediction that there would be 'open fields for far more important researches', and that much light would be thrown 'on the origin of man and his history'?<sup>34</sup>

Excited, Dart now set his sights on his long-term dream of pursuing medical studies at the University of Sydney. The branch of medicine he had decided to study remained, for reasons known only to himself, unrevealed to friends and family. Years would pass before he casually mentioned the well-head of his decision in a letter to a colleague, 'My intention to study neurology arose from my work in Queensland where I took my BSc.'<sup>35</sup> (fig.18). Who could have predicted the future path to fame of this young science graduate?

### University of Sydney

In 1914 and wearing the gift of a gold watch and chain from his father for his 21st birthday, an item he would treasure all his life,<sup>36</sup> Raymond Dart boarded a steam train at Brisbane to take him on his exciting journey of 1000 kilometres to Sydney to begin his long-cherished plan to study medicine. His credentials of a BSc (Hons.) from the University of Queensland gained in 1913, ensured his admission to Medicine 11 at the University of Sydney, the first established in Australia in 1850. (fig. 19). Its Medical School, likewise the oldest in the land, had opened in 1883 and was set 'on a sound footing in the Edinburgh tradition'<sup>37</sup> by its founder, Thomas Anderson Stuart. (fig. 22).

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Encyclopædia Britannica, Inc., Chicago, p.466; *E. Britannica*, 15th edn, vol. 3, p.894.

34 Darwin, *The Origin of Species*, p.402.

35 Raymond A. Dart letter to P. Morison, Canberra, Australia, 29 Aug. 1983.

36 Frances Wheelhouse, *Raymond Arthur Dart; A Pictorial Profile; Professor Dart's Discovery of 'The Missing Link'*, Transpareon Press, Sydney, 1983, p.27.

37 Michael J. Blunt & Patricia N. Morison, *Australian Anatomy in the 1920's*, Anatomical Society of Australia and New Zealand, Sydney, 1983, p.1.

Raymond Dart's scholarship had gained him residence in St Andrew's College of the University of Sydney<sup>38</sup> established by a Government Act (12 December 1867) to house Presbyterian and other students. It provided residence and domestic supervision, with systematic religious instruction in accordance with the principles of the Presbyterian Church of New South Wales'.<sup>39</sup> In addition, efficient tutorials were available to supplement university lectures. Dart's scholarship covered the overall annual fee of sixty-three guineas.

Dart soon found himself in the company of a crowd of hearty collegians from amongst whom many an outstanding figure in Australia would emerge, including more than one to make his mark internationally. Dr Herbert Vere Evatt, for instance, then in his third year of Arts, had a brilliant academic career and left the University and College after gaining his MA and LLB degrees to become a barrister. He was called to the Bar in 1918 and became a KC (King's Counsel) in 1929. He was Labor member in the New South Wales Legislature from 1925 and in 1930, became the youngest ever Justice of the High Court of Australia. In 1940 he served in the John Curtin Federal Labor Government as Attorney General and Minister of External Affairs. Perhaps the cap of his triumphs was from 1948-49 as President of the General Assembly of the United Nations. From 1951 he became Opposition leader in the Australian Parliament. During this time the Petrov Spy Case erupted in which he gave legal service and from which time his political career waned and never recovered.<sup>40</sup> While still in residence at St Andrew's College, Evatt in 1917 would co-author a thought-provoking essay, his collaborator, one, Raymond A. Dart. While others had mentioned previously an invisible factor in College Life which imbued in students a high standard of conduct and endeavour, Evatt and Dart would elucidate their ideas of which were the essences of this factor which played an important role in the University's corporate life.<sup>41</sup>

Among Dart's residential collegiate friends were Alexander R. Scott Orr, with whom he is thought to have shared his College room,<sup>42</sup> Edward

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38 R. A. Dart, 'Recollections of a Reluctant Anthropologist', *J. Hu. Evol.*, no. 2, 1973, p.418.

39 *St Andrew's College Calendar*, University of Sydney, Sydney, 1916, pp.9, 11.

40 John Shaw, (ed.) *Collins Australian Encyclopedia*, Collins, Sydney, 1984, p.216.

41 H. V. Evatt & R. A. Dart, 'College Life', *Calendar of St Andrew's College within the University of Sydney and Theological Hall for the Year, 1918*, pp. 29-30.

42 Donald Scott Orr letter to F. Wheelhouse, 17 Sept. 1973.



A. Woodward, Roy Allen Sillar, Reginald F. Matters, Keith M. Garrett, Eric P. Holland, Jack McFadyean Rossell, F. L. Foote and V. R. Wilson, all undertaking various stages of medical studies.<sup>43</sup> Except for Foote and Wilson, (both from Ipswich Grammar School), the others with Dart constituted the ninety-four students undertaking Medicine 11;<sup>44</sup> Woodward, Tunks and Mitchell becoming Dart's prosector colleagues in cadaver dissection work.<sup>45</sup> (fig.28).

Dart studied his medical subjects under several lecturers whose talents varied. Professor T. P. Anderson Stuart (knighted in June 1914), Dean of the Faculty and Head of the Medical School, taught physiology. (fig.22). His career is said to have had few parallels in medical or other annals. His progress from a brilliant student in the Edinburgh Medical School under Turner, Rutherford and Lister determined that he establish the Medical School in Sydney and there to serve as its Dean for thirty-six years.<sup>46</sup> Opinions differ as to Anderson Stuart's capacity as a lecturer. Professor Scot Skirving notes, 'He was a glorious lecturer and could evolve admirable methods of experiment and demonstration'.<sup>47</sup> On the other hand Raymond Dart was to remember him as a forceful though rhetorical lecturer who used material from a previous decade, a lecturer who aroused little enthusiasm in the students for his subject of physiology.<sup>48</sup> Yet another, V. R. Wilson, a compatriot of Dart's from Ipswich Grammar School was so unimpressed with Stuart's lectures he later confided his sentiments of his teaching to his old school's head, 'Rowdyism of the students and ragging the Professor is common here, in fact too, too common for the patience of the latter'.<sup>49</sup> Though praiseworthy of Stuart's lecturing skills, Scot Skirving was unimpressed on other grounds, his 'unlovely and almost childish efforts to influence people' and his failure to achieve scientific distinction.<sup>50</sup> Dart, however, praised Stuart's talents in the role of founding the Medical School though aware of his methods in achieving this, 'It is no exaggeration to state

43 *Calendar of St Andrew's College*, 1918, Sydney, p. 41.

44 *University of Sydney Calendar 1914*, Sydney, 1915, pp.464-65.

45 F. Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile*, p.28; R. A. Dart interview by F. Wheelhouse, Johannesburg, 1 Feb. 1973.

46 Raymond A. Dart, 'Anderson Stuart His Relation to Medicine and the Empire', [rev. art.], *Nature*, vol. 111, 27 Jan. 1923, p.111.

47 Ann Macintosh, (ed.) *Memoires of Dr Robert Scot Skirving 1895-1956*, Foreland Press, Sydney, 1988, p.286.

48 R. A. Dart, *Nature*, vol.111, 27 Jan. 1923, p.111.

49 V R. Wilson, *Ipswich Grammar School Magazine*, vol.8, no. 2, Dec. 1916, 34.

50 Ann Macintosh, p.286.

that that phenomenon [the Medical School] was the offspring of Anderson Stuart's imagination and the function of his consummate scheming and effective individual manoeuvre'.<sup>51</sup>

Other lecturers in Dart's student days were Dr S. A. Smith (brother of Grafton Elliot Smith) who aided Professor Wilson in Anatomy, D. A. Welsh who taught Pathology, Charles Maclaurin covered Clinical Surgery, while George E. Rennie and Robert Scot Skirving lectured in Clinical Medicine.<sup>52</sup> Scot Skirving was remembered by Dart as 'a figure of eminence in my student days'.<sup>53</sup> (fig. 24).

However, it was Professor Wilson who for Dart was the dominant influence during the next four years.<sup>54</sup> (fig.23). James Thomas Wilson had been recruited from the Edinburgh School of Medicine in 1887 as a Demonstrator by Professor Anderson Stuart, and in 1890, when twenty-eight years of age was appointed to the Chair of Anatomy.<sup>55</sup> Anderson Stuart also recruited many other brilliant scholars for his Sydney Medical School during this early period including C. J. Martin, Alexander MacCormick and Almroth Wright to mention only three, all of whom were later knighted and gained 'deserved distinction'.<sup>56</sup>

Wilson was a devotee of the arts and philosophy. A regular church-goer, it was said he was able to balance his religious beliefs with Darwinian theory, a man who pursued truth in science with utmost dedication.<sup>57</sup> A Scot himself, Professor Scot Skirving depicted Wilson, 'a complete Scot'. He was affectionately known to both colleagues and students as 'Jummie',<sup>58</sup> (sometimes 'Jummy').<sup>59</sup> Student Burkitt (a later Professor of Anatomy at the University of Sydney) recalled Wilson as, 'A man of outstanding personality,

51 R. A. Dart, *Nature*, vol. 111, 27 Jan. 1923, p.111.

52 *University of Sydney Calendar 1914*, Sydney, 1915, p.405.

53 Raymond A. Dart, letter to Ann Macintosh (Grand daughter of Robert Scot Skirving and wife of Professor N. W. G. Macintosh a later Professor of Anatomy, University of Sydney), 27 Mar. 1978.

54 Raymond A. Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol. 8, no. 3, 1972, p. 171.

55 Blunt & Morison, p.2; A.N. Burkitt, Obituary, *The Medical Journal of Australia*, 29 Dec. 1945, p.512, states Wilson was twenty-nine years old when appointed to the Chair.

56 Ann Macintosh, (ed.), *Memoirs of Dr Robert Scot Skirving 1859-1956*, Foreland Press, Sydney, 1988, pp. 286-89.

57 Blunt & Morison, p. 5.

58 Ann Macintosh, (ed.), p.290.

59 R. A. Dart, 'Recollections of a Reluctant Anthropologist', *Journal of Human Evolution*, 2, 1973, p.418.

tall and spare, with a slight student's stoop and a long somewhat austere face, except when lit by a disarming smile'.<sup>60</sup>

Wilson was considered a master of all aspects of his subject, anatomy. His main research was undertaken in comparative anatomy of the musculo-skeletal system and in the anatomy and embryology of monotremes (egg-laying mammals). At the first International Congress of Anatomists in 1905 at Geneva, Wilson put the Sydney Medical School on the map when he presented results of his collaborative work with J. P. Hill on *Ornithorhynchus* (the Australian duck-billed platypus, a semi-aquatic, oviparous mammal). Later both were elected to a Fellowship of the Royal Society, Wilson in 1909 and Hill in 1913.<sup>61</sup>

C.J Martin FRS (later knighted) also shared much of this research when lecturer in physiology at the University of Sydney.<sup>62</sup> Scottish-born J. P. Hill spent fourteen years from 1892 as an anatomist at the University of Sydney, then in 1906 held the Jodrell Chair of Zoology and Comparative Anatomy and from 1921, the Chair of Embryology and Histology at the University College, London. It was at this latter university that Raymond Dart in that year became associated with him when in England.<sup>63</sup>

Thus imbued with Darwinian ideas, Wilson continued building a sound tradition of scientific research gaining greater international respect. Colleagues and students alike experienced his superficially stern Calvinistic outlook, which at first made them wary of him,<sup>64</sup> although he was also known as 'really the kindest of souls'.<sup>65</sup> As a lecturer Wilson was considered not to have strong delivery,<sup>66</sup> though most acknowledge him as a great inspiring teacher because of his gift of clear expression, his broad view, his strong grasp of his subject in hand and his capacity for balanced and critical judgement.<sup>67</sup> During his lectures many a student's interest was snared by

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60 Burkitt, *The Medical Journal of Australia*, 29 Dec, 1945, p. 512.

61 Blunt & Morison, pp.5, 9-10; Burkitt, *The Medical Journal of Australia*, p. 514.

62 Ann Macintosh, (ed.), p.286; Burkitt, *The Medical Journal of Australia*, 29 Dec. 1945, p.514.

63 Blunt & Morison pp.9-10; R. A. Dart, *Mankind*, 2, 1972, p. 173.

64 Burkitt, 29 Dec. 1945, p. 512; Blunt & Morison. pp.2, 5.

65 Ann Jervie Sefton, Nicholas Cheng, Ian G. Thong, (eds.), *The Centenary Book of the Sydney University Medical Society*, Hale & Iremonger, Sydney, 1992, p. 173.

66 Blunt & Morison, p. 2; Burkitt, p. 512.

67 'J. P. H.' (James P. Hill), 'J. T. Wilson: A Biographical Sketch of his Career', *Journal of Anatomy*, vol LXXV1, part 1, Oct. 1941, p. 8.

his clever use of lantern slides.<sup>68</sup>

However, it was in dissection work that Wilson demanded the highest skills from his students, insisting the human body be dissected at least twice.<sup>69</sup> Freshers at first found dismembering 'stiffs' a gruesome task. One student remembered how at times to gain relief, the dissection room became a battle arena between Med.1 and Med.11 students - fortunately though, 'missiles' were rare things.<sup>70</sup> Wilson pressed his students to attain proficiency in laboratory techniques, talents which he himself possessed in large measure.<sup>71</sup> In praise of Wilson in 1950, Sir Charles Bickerton Blackburn as Chancellor, University of Sydney, emphasised his world reputation, 'as a great anatomist and a great teacher'.<sup>72</sup> During August 1914, the visit to Sydney of the British Association for the Advancement of Science for part of its 84<sup>th</sup> Meeting in Australia, provided a wonderful opportunity for Raymond Dart to see and hear world-famous figures in science from England, the Continent and America, 'who had previously been only awesome names.'<sup>73</sup> He attended these meetings of his first international conference with a modicum of pride and great enthusiasm, for Wilson had directed him to prepare material for it, a privilege for which he said he would have gladly paid.<sup>74</sup> He would prepare the specific gravity determination of bones from South Sea Islanders under the supervision of Louis Schaeffer, Wilson's chief laboratory technician, and whom Wilson had trained from boyhood. Dart's results were used by Dr S. A. Smith in his Congress paper, 'Cranial Observations on a series of Solomon Island Skulls'. Dart recalled, 'I used to cut up those bones and make measurements on them with a very quaint apparatus...Professor Wilson used to drop in during the evenings...and advise me what further to do'.<sup>75</sup> For Dart, this experience was not only initiation into the basic routines of research, but was responsible for opening up an association between him

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68 V. R. Wilson, *Ipswich Grammar School Magazine*, vol. 8, no. 2, Dec. 1916, p. 34.

69 Blunt & Morison, p. 2.

70 V. R. Wilson, p. 34.

71 Blunt & Morison, p. 2.

72 R. A. Dart, The Inaugural John Irvine Hunter Memorial Oration, University of Sydney 31 Jan. 1950 (unpublished transcript held in Shellshear Museum, Medical School, University of Sydney), in introduction of Dart by Chancellor, Sir Charles Bickerton Blackburn.

73 Dart with Craig, *Adventures with the Missing Link*, p.26.

74 *ibid.*, p. 26.

75 Dart, The Inaugural John Irvine Hunter Oration, University of Sydney (unpublished) 31 Jan, 1950, transcript, p. 3.

and Professor Wilson.<sup>76</sup>

The greatest drawcard at this Congress for academics, students and the public alike was without doubt Grafton Elliot Smith (later Sir) (fig.24), 'the first of Wilson's protégés'.<sup>77</sup> A country lad, son of a headmaster, Grafton Elliot Smith was born at Grafton on the New South Wales far north coast on 15 August 1871. He attended the Grafton Public School, Sydney Boys High School and the University of Sydney (1888-1892) where he graduated in Medicine with First Class Honours.<sup>78</sup> At an early stage Wilson spotted Elliot Smith's talent for independent research and guided his interest to marsupial brain research. His astute protégé quickly discovered these brains were deficient in 'the corpus callosum'; (the thick band of commissural connecting fibres between the cerebral hemispheres). Both Wilson and Martin further interested him in the study of native fauna and together, with James Peter Hill, this group gained fame as the 'fraternity of the Duckmaloi'<sup>79</sup> by virtue of their studies of the platypus (*Ornithorhynchus*) along the Duckmaloi River in New South Wales.<sup>80</sup> (fig.27).

Shortly before Elliot Smith's arrival in Sydney a thumbnail sketch of his achievements advised, he has 'pretty well all the letters that could attach themselves to a great man of science whose speciality is medicine'.<sup>81</sup> These he had gained 'as a thin, pale, studious-looking, shy-mannered young medical graduate of 1893'.<sup>82</sup> He became a Demonstrator in Anatomy two years later and gained his MD with the University Medal for his work on the Morphology of the Brain. After leaving Sydney in 1896 on a scholarship he was admitted to St John's College Cambridge when twenty-five years old and in 1899 was elected a Fellow of that college. Even though by then quite famous, his undergraduates knew him as a quiet modest chap who surprised

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76 A. N. Burkitt, Obituary, *The Medical Journal of Australia*, 29 Dec. 1945, p.512.

77 Blunt and Morison, p. 6.

78 Sir Grafton Elliot Smith Centenary Commemoration Programme 30 Oct. 1972, University of Sydney, The Royal College of Surgeons, pp. 1-4; A. P. Elkin & N. W. G. Macintosh (eds.), *Grafton Elliot Smith : The Man and His Work*, Sydney University Press, 1974, on p. 7. H. D. Black quotes Elliot Smith's date of birth as 14 Aug. 1871.

79 Blunt & Morison, p. 3.

80 David Branagan & Graham Holland, (eds.), *Ever Reaping Something New: A Science Centenary*, University of Sydney Science Centenary Committee, Sydney, 1985, p. 150.

81 *Hermes, The Magazine of the Undergraduates Association*, University of Sydney, vol. XX, no. 2, Aug. 1914, p. 56.

82 *ibid.*, p. 56.

at Reunions with renditions of good drinking songs. While in England he studied the pre-eminent brain collection of the Royal College of Surgeons Museum, then from 1899 to 1908 held the Chair of Anatomy at Cairo; while there widening knowledge of the spread of culture world-wide. At the time of his visit to Sydney he held the Chair of Anatomy and was Dean of the Medical Faculty at Manchester University. He was awarded the FRS (Fellow of the Royal Society) in 1907 and from 1912 was Vice-President of that Society. By 1914, aged 43, he was holder of the Royal Medal, the highest distinction in Science, and from France, the Prix Fauvelle for Anthropology. He was also a member of the Medical Council and ranked as 'one of the foremost scientific men of the world'.<sup>83</sup> (fig. 25).

A crowded audience waited in the Sydney Town Hall on 21 August 1914 with buoyed-up enthusiasm to hear this world-famous luminary and principal guest speaker. First, Sir Everard Im Thurn, CB, KCMG, delivered his address as President of the Anthropology section of the Congress. Evident in his speech was the meagre understanding of anthropological science of the times, based on the assumption that there was a common origin for the whole human race. He further claimed that civilised folks had advanced more rapidly, while 'savages' had been left behind to develop at a much slower rate and in quite a different direction.<sup>84</sup>

Entranced by Grafton Elliot Smith's brilliant lecture on 'The Brain of Primitive Man' so expertly explained by him with the aid of impressive lantern slides, Dart absorbed its content. Elliot Smith briefly recounted the discovery of previous Neanderthal man remains, also those of the most recent of a few weeks previously of two perfect skeletons in the neighbourhood of Rome. He related the finding of Java man, then known as *Pithecanthropus*, and prior to that in the 1880s (though only revealed at this 1914 Conference) of the first Australian Aboriginal fossil skull, from Taigai on the Darling Downs of Queensland. He outlined how in 1907 the Mauer jaw was unearthed near Heidelberg in Germany and how later in Europe other people followed who produced 'spirited and lifelike drawings in the caves'. He explained that by a series of happy chances of these discoveries something of man's antiquity of the great ice age of Pleistocene times

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83 *ibid.*, p. 58.

84 'Report of the Eighty-fourth Meeting, Australia, 1914, July 28-August', *Proceedings of the Eighty-Fourth Meeting of the British Association for the Advancement of Science*, London, 1915, p. 536.

was revealed.<sup>85</sup> He advised that by a series of links comprising shrews, long-tailed monkeys, marsupials, apes and Java man, evolution had worked towards producing mankind with the gorilla and chimpanzee man's closest relatives. Furthermore, he informed how certain species had survived without developing higher and that man had arrived at his present state by means of controlling his instinctive actions. He pointed out how the shrews threw off domination of the sense of smell and developed vision, which started a series of changes ultimately leading to man himself; how in man the development of the brain meant the development among other things of a sense of beauty and culture and how the human body developed a more graceful form.<sup>86</sup>

Speaking of early man Elliot Smith pointed out he had probably a jaw like an ape and a body having hair like a gorilla, though the brain was between that of higher apes and man. The creature which was to become man developed his brain first while the body remained at the earlier stage. He mentioned how some authorities refused to believe the human brainpan and huge canine teeth found at Piltdown (Sussex, England and publicly announced in 1912) came from the same skull, and went so far as to declare the finding of the Australian Talgai Skull with its great dog teeth finally settled that doubt.<sup>87</sup>

Right in so many factors of animal brain evolution, in the case of some aspects of human brain development Elliot Smith would err. At that time Raymond Dart was so fascinated by the substance of the lecture and the persona of Elliot Smith in his resplendent red gown, that he prayed that night that at some time in the future he might work under him.<sup>88</sup> Unperceived then was the fact that this young student in the audience would within the next decade illuminate more clearly the path of human brain development.<sup>89</sup> However that evening at the Sydney Town Hall, Elliot Smith impressed all before him, one journalist being moved to report:

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85 'From the Monkey Stage', *Sydney Morning Herald*, 22 Aug. 1914; 'The Mind of Primitive Man', *Daily Telegraph*, 22 Aug. 1914.

86 *Sydney Morning Herald*, 22 Aug. 1914.

87 *Sydney Morning Herald*, 22 Aug. 1914; Phillip V. Tobias, 'Piltdown An Appraisal of the Case against Sir Arthur Keith', *Current Anthropology*, vol. 33, no. 3, June 1992, p.244.

88 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith' *Mankind*, vol. 8, no. 3. June 1972, p. 171; Dart with Craig, 26.

89 Dart, '*Australopithecus africanus*, The Man-Ape of South Africa', *Nature*, vol. 115, no. 2891, 7 Feb. 1925, pp. 195-99.

In appearance he is still the gentlest of men. Smooth, serene, and thoughtful of countenance, with all too early whitening hair, he looks the picture of benevolent abstraction from the strife that sharpens faces into flint and gives tartness to manners. But he is a kind of scientific storm centre. Round him, at least, controversy is often raging. The latest is over the Piltdown Skull.<sup>90</sup> (discussed later)

Not only was Elliot Smith a world authority on the evolution and anatomy of the brain, but on the Ancient Egyptians and mummification. For two decades he stirred anthropological thought by his origin of civilization and its diffusion around the world from the Middle East, mainly from Egypt.<sup>91</sup>

Despite his busy Congress programme, Elliot Smith found time to address many groups including the University of Sydney Medical Society, advising at one time he had been its secretary 'in the days of its precarious childhood'.<sup>92</sup> Raymond Dart in the audience may well have been inspired by this remark as in the following year, 1915, he became the Society's Honorary Treasurer.<sup>93</sup> Elliot Smith charmed his audience with an outline of his anthropological and archaeological research, told them about his contact with each of the Empire's medical schools and delighted his audience with the comment, 'Sydney surpasses all others in medical education'.<sup>94</sup>

For Raymond Dart another 1914 conference of the BAAS (British Association for the Advancement of Science) of vital interest was the first public announcement of Australia's first discovered Aboriginal fossil skull, that of Talgai from his home state of Queensland. This session was for him, the 'meeting's most dramatic moment'.<sup>95</sup> Wilson, together with Professor T. Edgeworth David, noted Australian geologist and Antarctic explorer, commented on the skull's salient features in their joint paper, 'Preliminary Communication of an Australian Cranium of Probably Pleistocene Age.' Other delegates also discussed this unusual skull. One, Professor W. J. Sollas, of Oxford University and recent author of *Ancient Hunters*, became completely carried away in his eulogy of it. Drama unfolded. By raising this

90 *Hermes, the Magazine of the Undergraduates Association*, University of Sydney, vol. XX, no. 2, Aug. 1914, pp 56-8.

91 H. D. Black, 'Welcome to the Centenary Commemoration', in *Grafton Elliot Smith: The Man and his Work*, A. P. Elkin & N. W. G. Macintosh, (eds), pp. 5-6, also dust jacket.

92 *University of Sydney Medical Society Journal*, vol. viii, part 2, Oct. 1914, p. 5.

93 *ibid.*, vol. X, part 3, Dec. 1915, front cover.

94 *ibid.*, vol viii, part 2, Oct. 1914, p. 5.

95 Dart, 'Recollections of a Reluctant Anthropologist', p. 418.



precious object in his left hand and, with his right, wildly pointing out its rare features, Sollas drove fear into Wilson's heart for its safety. Wilson, nervous, quickly rose and from behind stealthily approached the gesticulating speaker and managed to grasp the skull from the 'orator's rear overhead', winning loud applause from the audience.<sup>96</sup> (fig. 26). In this quick-witted histrionics Dart witnessed yet another facet of Wilson's many-sided personality.

The declaration of war in August 1914 brought the Scientific Congress to an end. Turmoil ensued beyond campus and within it, mounting at the University towards year's end. From the Medical School alone, many academics and demonstrators were quick to enlist, eager to fight the enemy overseas. Dwindling staff and student numbers continued after the new year as still more left for the Armed Forces.<sup>97</sup> Courses were speeded up for those who remained, and students were prevailed upon to stay and finish their training; to resist their emotional instincts to join up and rush into battle.<sup>98</sup> Notwithstanding, 'white feather' groups appeared to force staff and students and the community at large to enlist. Dart's pathology lecturer, Professor Welsh, slighted his Medicine 1 and 11 students for not enlisting. Welsh admonished that by not doing so was 'equivalent to a refusal to help the Empire in its supreme need'.<sup>99</sup> This automatically put a restraint on Dart. Later Welsh modified this approach and advised that Medicine 11 students, and those in later years would be needed as trained medical men. Several students in their early years of study who had volunteered already, including the brilliant John Hunter (see later) was among those who were sent back to continue their medical studies.<sup>100</sup>

From war's commencement, Wilson, by virtue of his language and other skills was drawn into service with the Department of Intelligence and Directorate of Censorship, during which time Dr S. A. Smith became Acting Professor of Anatomy. Nevertheless, Wilson returned nightly to the Medical

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96 *Proceedings of the Eighty-fourth Meeting of BAAS*, p.536.; R. A. Dart, 'Recollections of a Reluctant Anthropologist, *Journal of Human Evolution*, 2, 1973, p.418.

97 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith, *Mankind*, vol. 8, no. 3, June 1972, p. 172; Dart with Craig, *Adventures with the Missing Link*, p.26.

98 Dart with Craig, p.26.

99 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith, p.172; Dart with Craig, p.26; Ann Jervie Sefton, Nicholas Cheng & Ian G. Thong, (eds), *The Centenary Book of the Sydney University Medical Society*, Hale & Iremonger, Sydney 1992, p.20.

100 Sefton, Cheng and Thong, (eds.), p. 20.

School to advance his researches on neurological problems. On one occasion he remarked to Dart, 'This is the only way I can relax and gain respite'.<sup>101</sup>

In 1915 Wilson had initiated neurological research for Dart who 'concentrated his attention upon cranial morphology and its potential illumination by a neurological approach.'<sup>102</sup> Wilson continued his own work on the mystery of Forriep's ganglion while guiding Dart in the techniques required and literature concerning it.<sup>103</sup>

For Dart the years 1914-15 were extremely busy. He passed well in his Medicine 11 examinations at the end of 1914 and also won the Bowman Prize and Goodlet 11 Theosophical Scholarship.<sup>104</sup> Additionally at year's end, 1914, he was appointed Tutor in Biology at St Andrew's College,<sup>105</sup> and he began research work with Professor Wilson, which lasted throughout 1915. (fig. 29). Additionally Dart continued his work as honorary treasurer for the Medical Society. During this year he also worked towards his MSc degree at the University of Queensland, an exercise demanding the extra toll, on occasion, of long train journeys back to Brisbane. (fig. 30). John Leslie Dart, Raymond's immediately younger brother who became a medical practitioner and, finally, ophthalmologist, remembers how Raymond studied upon his return home, 'lying on the cold floor and cramming a book each night.'<sup>106</sup> John Leslie recalls one particular night when a violent thunderstorm triggered a shocking migraine in Raymond, causing him to roll on the floor in agony. His concerned mother, ever at hand, resorted to lathering Raymond's overworked head with soap wrapping a towel around it, and putting him to bed. This novel remedy succeeded. By morning, Raymond was up pursuing his normal course.<sup>107</sup>

His gargantuan effort proved successful. Dart gained his MSc degree

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101 Dart with Craig, p.26; A.N. Burkitt, Obituary, James Thomas Wilson, *The Medical Journal of Australia*, 29 Dec. 1945, p.512.

102 Dart, 'Recollections of a Reluctant Anthropologist', p. 417.

103 *ibid.* p.419.

104 *St Andrew's College Calendar*, 1915, pp. 6-7.

105 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', vol. 8, no. 3, June 1972, p. 172.

106 John Leslie Dart interview by Frances Wheelhouse, Surfers Paradise, Qld, 22 June 1975.

107 *ibid.*

at the University of Queensland with First Class Honours.<sup>108</sup> He did well in addition in his Medicine 111 examinations at the University of Sydney, achieving a credit rating. Once again he won the Goodlet 11 Scholarship.<sup>109</sup>

Dart's earlier association with Wilson in research for the British Association for the Advancement of Science meetings in Sydney, and more recently his neurological research with his Professor had given him considerable experience in the routines of basic research. He realised the tremendous value of this together with his tutorship in biology at St Andrew's College. Objectively he thought other students might also benefit if given a chance to undertake research projects. He put the idea up to Wilson who at first, queried student response. Dart assured him that a group of gifted young men and women now studying medicine on campus would grasp the opportunity. Persuaded, Wilson allotted a set of six anatomical problems for these chosen students, and gave Dart the bonus of supervising the work of John Irvine Hunter who had too early enlisted in the Armed Services and had been sent back to the university to resume his studies. Hunter then in his second year of medical studies in which he excelled, did likewise with his new research tasks.<sup>110</sup>

Wilson continued his research on the hinder part of the brain, a problem which fascinated Dart, who began to wonder, 'how many body segments had been needed to make the human head?'<sup>111</sup> Dart brimmed with just such queries for Wilson at his weekly supper appointments with the great scholar when they discussed current projects and departmental affairs.<sup>112</sup> Dart recounted later, 'I was able to report to him on Johnny Hunter's brilliant progress as a medical student among other matters'.<sup>113</sup>

The War was drastically depleting staff at the Royal Prince Alfred Hospital where medical students underwent their hospital training. Havoc prevailed in obtaining sufficient resident medical officers when students had graduated. Many resident medical officers had joined the Armed Forces

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108 University of Queensland Archives, S157 / 3, Microfilm of Student Cards, pre 1959, Dart, R. A.

109 *St Andrew's College Calendar*, 1916, p. 10.

110 Dart, The Inaugural John Irvine Hunter Memorial Oration, 31 Jan.1950, (unpublished) transcript, p.3.

111 Dart, 'Recollections of a Reluctant Anthropologist' p.419.

112 R. A. Dart, letter to Patricia Morison, Canberra, 20 Aug. 1983.

113 *ibid.*

from 1914 onwards, in too many cases only serving two or three months in the hospital instead of the usual period of twelve months. Often negotiations with the Medical Society helped obtain staff.<sup>114</sup>

When Dart responded to be honorary treasurer of the University of Sydney Medical Society in 1915, ten members of Dr W. R. Page's Council had joined the Armed Forces. Page managed to lift membership to 353, hold seven meetings and two clinical evenings in the Vesalian Theatre (later Anatomy Tutorial Rooms). Three issues of the *Journal* were achieved carrying illustrated articles of life at the war front. Dart as treasurer, busied himself raising money for the Lady Stuart fund which provided a gramophone donated by the medical students for the Australian General Hospital at Lemnos, Greece. The Medical Society did exceptional work in these times of crisis assisting the hospital for example by replacing graduate librarians as they left for the war front, with undergraduate medical students.<sup>115</sup>

Dart continued his service in the Medical Society and in 1916 he shared with another undergraduate, G. R. Hair and graduate Dr A. T. Chapple, the positions of the Society's honorary secretaries.<sup>116</sup> The new president, Dr A. N. St G. Burkitt, faced further depletion of members, now down to 265 with only 25 per cent of students available for membership. In this period of loss of life, grief and mourning, only ordinary meetings took place, all social functions ceasing.<sup>117</sup> Dart no doubt played a role in promoting the Anatomy Department as Wilson introduced Dr S. A. Smith to address a mid-year gathering of 400 members on 'Prehistoric Man and the Talgai Skull',<sup>118</sup> with Wilson producing an article for the *Journal*, on 'The Neurones of the Sensory Ganglia'.<sup>119</sup>

By 1916 many Honoraries and Resident Medical Officers of the hospital staff had enlisted in the forces and insufficient new graduates were now available. This crisis, made worse by the absence of a prerequisite to

114 *Royal Prince Alfred Hospital 34th Annual Report 1918-1921*, RHAP, Camperdown, Sydney, 1921, p.30.

115 Sefton, Cheng & Thong, p. 20.

116 *The University of Sydney Medical Society Journal*, new series, vol. X1, part 1, June 1916, p. 165.

117 *ibid.* vol. X1, part 3, Jan. 1917, p.103.

118 *The University of Sydney Medical Society Journal*, n.s. vol. X1, part 1, June 1916, p. 165.

119 *ibid.* vol. X1, part. 3, Jan. 1917, p. 103.,

serve as a resident towards qualifying as a medical practitioner, demanded major changes. Of necessity medical courses were compressed by reduction of the vacation period.<sup>120</sup> As well fourth year students were pressed into service as junior resident medical officers. Dart had just completed his fourth year (again in the credit range) when assigned in this capacity to the hospital on 1 January 1917 with his final year of medicine yet incomplete.<sup>121</sup>

Dr C. G. McDonald who graduated in 1916 was President of the Medical Society in 1917, had Dr J. L. McKelvey together with undergraduates Hair and Dart as honorary secretaries.<sup>122</sup> Such a gifted team of office bearers helped ensure a year which 'eclipsed all previous standards in membership, general support and financial success.' Achievements included improved student quarters at the hospital, libraries provided at Royal Prince Alfred Hospital and Sydney Hospital, even a much needed paved path from the hospital to the Medical School, a bonus for the Honoraries who found they could now arrive on time for their lectures.<sup>123</sup> At this time Dr McDonald was at the beginning of a long and distinguished career as Senior Physician of the RPAH (Royal Prince Alfred Hospital), President of the Royal Australasian College of Physicians; knighted in 1962 and Chancellor of the University of Sydney in 1964. Dart continued his energetic and valuable services to the Medical Society and for these, as a token of thanks, was accorded honorary membership of that Society.<sup>124</sup> (fig.31).

The year 1917 proved significant in respect to Dart's intellectual growth and self-confidence. He possessed an extraordinary capacity for work. In addition to his demonstratorship, his studies, his Medical Society duties, his responsibilities as an intern at the Royal Prince Alfred Hospital, his lectureship in Science at St Andrew's College,<sup>125</sup> he also became Acting Vice-Principal at St Andrew's College.<sup>126</sup> (fig. 32). He even found time to

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120 Sefton, Cheng & Thong, p.20

121 *Royal Prince Alfred Hospital 34th Annual Report 1918-1921*, Sydney, 1921, pp. 30-31, 83.

122 *The University of Sydney Medical Society Journal*, vol. X11, part 1, June 1917, p. 100; Sefton *et al*, p. 21, however lists John Paling and R. A. Dart as honorary secretaries for 1917.

123 Sefton *et al*, p. 21.

124 *ibid.*, p. 21.

125 *St Andrew's College Calendar*, 1917, p.12.

126 *ibid.*, 1918., p. 41.

honour the request of the Headmaster of Ipswich Grammar School for news of his university activities in a lengthy letter for publication in the school's magazine. While this letter does not reveal the secret of his energy, it tells much about Dart's outlook upon the world in which he was being prepared for adult life's challenge. Seven years earlier he revealed in his letter, he had been 'working hard (?) for the Senior within the walls of the dear old School.' He described the changing face of the University of Sydney with the completion of the Fisher Library, joining the main campus to make one side of the University quadrangle, two sides of which were nearly completed. He reported that Manning House was erected for the University Union, while an addition was made to Wesley College, and construction of the Teachers' Training College commenced. He stressed the importance of the various societies of Medicine, Law, Engineering, and so on, and how the huge 600 strong reunion of undergraduates had been 'more noisy than successful'.<sup>127</sup>

Interesting is Dart's reflection that the widening of the women's domain with their own building would 'greatly increase the scope of their activities, and their influence on the corporate University life'.<sup>128</sup> Apart from his devotion to his mother, Eliza and to his sister, Lucinda, Dart's attentions appeared not to waver from the ever-increasing demands of his scholastic regimen, his total commitment to study in the furtherance of his career. With his boyhood's experience in a family so large, his memory sharp as to its multiple needs and obligations, he could well have reflected on Scottish author and medico (1812-1904) Samuel Smile's dictum, 'do only one thing at once'.<sup>129</sup> At least, at this particular and demanding period of his life, no dalliance! That Dart mentioned women's influence on the corporate University life, without quibble in times when women's advance so often met with masculine derision, illustrates his willing recognition of their rights in the expanding human scheme, his breadth of vision, his realism.

Further items of news to his old school mention the University's patriotic fetes for the war effort and elimination of intercollegiate cup contests during wartime. He advised some home spun philosophy of his own as to 'how a man's personality must be sunk since he is merely a unit in

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127 Raymond A. Dart, 'University Letter', 31 May 1917, *Ipswich Grammar School Magazine*, n.s., vol. 9, no. 3, June 1917, pp. 41-51.

128 *ibid.*

129 Angela Partington, (ed.) *The Concise Oxford Dictionary of Quotations*, Oxford, 1993, p. 308:18.

a large community, and how necessarily on the other hand, patriotism and the capacity for team work those qualities so admirable and necessary, must correspondingly be developed'.<sup>130</sup> He then revealed his personal vision of the future:

and if the "Dei immortales" are favourable, August should see me through the portals of this temple of learning, and out to the great struggle, provided it still continues; and, coming so nearly to the end of one's course makes one more sad than happy, for the old ties will have to be severed, and strange new relationships investigated and formed. But the traditions of the old school and the University and of College will always live for us, and the days we have spent in each, form our brightest and happiest memories.<sup>131</sup>

In this and other parts of his letter are not only portrayed Dart's keen awareness of what was happening around him, but an appreciation of its inherent value both to himself and fellow students. As noted his attitude towards women's unfolding role begets praise, while his understanding that for the effectiveness of team work, the ego must be subjugated, bespeaks a keen intelligence. Realism is conveyed in his projection of facing new situations and friendships, a trait ever to develop within him, as well as an ability to reflect upon the past. The emotional and conventional side of Dart's makeup is glimpsed in his genuine regret over the severing of old ties. Over years and under strong emotional moments of stress in his life, his tears would unashamedly flow.<sup>132</sup>

For Raymond Dart during his study-filled years and extra-curricular activities, time was a most precious commodity. He monitored it objectively even to the extent that when he suffered his regular nasal, throat, 'flu or cold bouts he quickly became a hospital outpatient for treatment to try and quell these in short time. Nevertheless at times he could not avoid several days in bed now and then to recover. Other than such infections, he was on occasions afflicted with painful boils and carbuncles.<sup>133</sup>

Dart made sure a reasonable amount of time was deployed for

130 *Ipswich Grammar School Magazine*, n.s., vol 9, no. 3, June 1917, pp.41-51.

131 *ibid.*, p. 51.

132 Judith Maguire, Bernard Price Institute for Palaeontological Research, Johannesburg, letter to F. Wheelhouse, 7Jan. 1994.

133 Raymond Dart, 'Nasal Hygiene - A Contribution to the Prevention and Control of Nasal Infection', *The Leech*, June 1936, p.4.

holidays visiting friends and partying at their homes.<sup>134</sup> He travelled regularly by train to visit distant relatives at Croydon Park to engage in the stimulating company of John Dart, the local headmaster and his brother, George, a school inspector, often staying whole week-ends.<sup>135</sup> Dart's grandchildren, who lived with him, clearly recall Raymond Dart's visits to their home in Seymour Street, and later, Dart sending them postcards from France during World War 1.<sup>136</sup>

Time was also set aside for sport which Dart greatly enjoyed, though he seems to have been accident prone. One of his sporting delights, sailing on Sydney Harbour, came to an abrupt suspension when he fractured his right arm.<sup>137</sup> After this misfortune and desperately needing to keep writing during his studies and examinations, he taught himself to do so with his left hand. His thoughts turned to why one hemisphere of the brain should be dominant and why and how this might be modified. From then he firmly believed that people should use both sides of their body equally. Thus his active interest in neurophysiology and in this phase of medicine it was said 'his thoughts and theories were way ahead of time.'<sup>138</sup>

Over time Dart pursued sporting activities in tennis, rowing and swimming, the latter involving another accident while on vacation at Port Macquarie. He recorded that he dived into the shallow end of a swimming pool while there and was 'fortunate not to have broken my neck!'<sup>139</sup> This event which occurred on 17 January 1917 could have been disastrous for his final year of studies, but for the skilled treatment by masseuses and physiotherapists (then known as medical gymnasts) at the Royal Prince Alfred Hospital. This beneficial ministrations aroused his gratitude and generated a life-interest in promoting paramedical personnel as a service to medicine.<sup>140</sup>

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134 Raymond A. Dart interview by F. Wheelhouse, Johannesburg, 7 Feb. 1973.

135 Raymond A. Dart letter to F. Wheelhouse, 13 May 1971; Raymond a. Dart letter to Ann Macintosh, Sydney, 31 July 1979.

136 Elsie M. Evans, Epping, Sydney, letter to F. Wheelhouse, 22 Mar. 1995. Elsie M. Evans is the grand daughter of John Dart of Croydon Park.

137 Diana Dart Graham interview by Kay Smithford, Spartanburg, SC, USA, 18-21 Jan. 1994.

138 *ibid.*

139 R. A. Dart letter to F. Wheelhouse, 22 Feb. 1974.

140 Mary Bisset Lucas, 'The Complete Opportunist or Professor Raymond Arthur Dart and Physiotherapy in South Africa', *Adler Museum Bulletin*, vol. 19, no. 3, Dec. 1993, p. 3; R. A. Dart letter to F. Wheelhouse, 22 Feb. 1974.



During 1917 Raymond Dart still contributed his energies to student welfare. As mentioned earlier he co-authored an article with another undergraduate, Herbert Vere Evatt. (fig. 27). This appeared in the *University Student's Handbook*, published by the University Christian Union, sections of which were re-presented in their own college magazine.<sup>141</sup> They had taken the theme of an invisible factor of College Life mentioned some years earlier in an article in *Hermes, the Magazine of the Sydney University Undergraduate's Association*, and attempted to define some reasons for this.

In doing so the authors pondered the mysterious transformation of rough-edged 'Freshers' into Seniors of 'harmonious and genial maturity'. They pinpointed certain factors which they considered played a role in this conversion. These embraced residence and domestic supervision, systematic religious instruction, tutorial assistance, intellectual competition, athletic sport and Union Club and Society activities. Even the *esprit de corps* was not discounted by means of the morning cold shower, daily prayers, chapel, reading of daily newspapers, perhaps the brisk walk to and from lectures or discourse over dinner or afterwards. Such influences they thought helped modify and redirect students in College Life; which itself was the touchstone of the highest University and social ideals.<sup>142</sup>

Dart and Evatt had both drawn benefits from such a touchstone. They had over their student days served as Tutors at St Andrew's College (Dart in Biology and Evatt in Law and English). They had served in honorary executive capacities on a number of university associated bodies and had participated in sporting and social functions. During the early part of 1918, even after graduation, Dart still served as Acting Vice-Principal of St Andrew's College itself and together with Evatt acted as one of the six vice-presidents of the College Club and House Committee.<sup>143</sup>

Dart showed that in gaining much benefit from College life in sporting, debating, administrative training, social and intellectual intercourse with scholars of the day, he was quite prepared to contribute considerably to its life in a range of capacities. With the interest of the College at heart he produced many beneficial changes, often cutting through the severest

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141 H. V. Evatt & R. A. Dart, 'College Life', *Calendar of St Andrew's College within the University of Sydney and Theological Hall for the year 1918*, pp. 29-30.

142 *ibid.*

143 *St Andrew's College Magazine*, no., 16, Nov. 1918, pp. 11, 14.

criticism or indifference to them by his sheer personal enthusiasm and effective planning. It is not surprising that the innovator's drive and keenness would arouse initially, envy.<sup>144</sup> Nor is it to be wondered at that Dart's capacity capably to demonstrate and explain such need for change, would in turn, draw much praise. He did not expect others to labour in their implementation but employed his own abundant physical energy—as for example, in the huge task of refurbishing the Library. Much appreciated were his cerebral efforts at transforming the existing College Calendar, 'from a bilious pamphlet into an interesting (if somewhat imaginative) account of College and its activities'.<sup>145</sup>

Fittingly his valuable reforms were later recognised and recorded in the College Magazine as monuments to his work. His influence remained alive long after his departure when several of his earlier ideas bore fruition. One which would have particularly pleased him was his scheme of introducing after-dinner talks to College residents by men who had made their mark in non-academic spheres. In Dart's mind this would help correct the inevitable tendency for students to view the whole world from a purely academic point of view.<sup>146</sup> Many significant past influences had aided in moulding Dart's character. His capacity as a leader who could formulate and achieve worthwhile change was becoming apparent.

Dart had attained his MD, ChM Degrees on 3 September 1917 and on 8 October 1917 his Master of Surgery Degree.<sup>147</sup> Although he ended his Senior Resident Tutorship at St Andrew's College, he remained Acting Vice-Principal.<sup>148</sup> During this period he became associated with Dr Vere Gordon Childe,<sup>149</sup> the brilliant and somewhat enigmatic academic who succeeded him when appointed Senior Resident Tutor though specialising in Classics and Philosophy at the College. Childe was then 'at the start of his meteoric career which transformed European archaeology'.<sup>150</sup> Although he gained the esteem and respect of many, his early resignation at the end of first term is said to have reflected intolerance by others of his social and political

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144 *ibid.*

145 *ibid.*

146 *ibid.*

147 University of Sydney Graduation Record Books, 1917, Raymond A. Dart.

148 *St Andrew's College Magazine*, no. 16, Nov. 1918, p. 11.

149 *ibid.*, 12.

150 R. Ian Jack, (ed.) *The Andrew's Book*, St Andrew's College, University of Sydney, 1989, p.53.

views.<sup>151</sup> Such intolerance would have been an anathema to Dart with his already firm ideas of racial, political and religious tolerance to others, ideals which he carried through in full measure during his life.<sup>152</sup> Over the years Dart would follow Dr Childe's impressive career. He served from 1919-1921 as private secretary to the Premier of New South Wales. Among many appointments he held the Chair of Prehistoric Archaeology at Edinburgh University from 1927-1946, was Director of the Institute of Archaeology of London University to 1957. A noted authority on early societies of Europe and the Middle East, he was author of numerous articles and several books on the subject. His international approach founded a tradition in prehistoric studies.<sup>153</sup> In later years Dart would often quote from Childe's worthwhile researches in some of his own scientific papers.<sup>154</sup>

By the end of 1917 Raymond Dart had every reason to experience personal satisfaction. He possessed the qualifications in both science and medicine that he had won from his two Alma Maters. To such qualifications he now added his valuable experience in the actual practice of medicine, serving at first as a Junior then as a Senior Resident Medical Officer at the Royal Prince Alfred Hospital from 1 January 1917 until 28 March 1918, fifteen months in all. On the latter date he was accepted for Army service.<sup>155</sup>

Shortly before on 9 March, Dart's spirits received a great boost in the shape of a gift from John Irvine Hunter, the brilliant young medical student assigned to his tutorship by Professor Wilson in 1916 and known to Dart as Johnny. Hunter, now twenty and celebrating his third year in medical studies with the publication of a sixty-eight page text on neurology for students, sent a copy to his erstwhile tutor inscribing his thanks for Dart's 'friendly interest'.<sup>156</sup> Where would his genius take him? Dart little dreamed their curious fates, his and Johnny's would one day bring them together again on a faraway shore.

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151 *St Andrew's College Magazine*, no. 16, Nov. 1918, p. 12.

152 Diana Dart Graham interview by Kay Smithford, Spartanburg, SC. USA, 18-22 Jan. 1994.

153 John Shaw (ed.), *Collins Australian Encyclopedia*, Sydney, 1984, p.216.

154 Raymond A. Dart, *Africa's Place in the Emergence of Civilisation*, South African Broadcasting Corporation Publication, Johannesburg, 1958, pp. 18, 49.

155 *Royal Prince Alfred Hospital 34th Report*, pp. 30, 83.

156 Phillip V. Tobias, 'The John Irvine Hunter Memorial Lecture for 1992', The University of Sydney, 1992, p.7.

Dart's whole world was about to change. He would sorely miss St Andrew's College, his home for the last few years, and often reflect on the bustling, enjoyable days spent in the large and imposing stone building, so suitably set in the extreme western grounds of the University next to the Royal Prince Alfred Hospital.<sup>157</sup> He would travel in his mind's eye through the main entrance, climb the imposing broad cedar staircase to the Dining Hall, and upwards again. He would recall wondrous moments in the Lecture Hall in the tutorial classrooms and Theological Library and his time in the Students' Common Room or Tutors' Private Common Room and College Library where events sometimes jocular, sometimes serious and often musical would take place on many a social evening. Never forgotten would be the College's lofty ceilings soaring overhead, and its exquisite stained glass windows.<sup>158</sup>

Over time, Dart would retrace his steps along the lengthy path in summer's heat and again in winter's cold from College to Medical School, and reflect on his early years of study there. Certainly he would remember the increasing tempo and crescendo of his final year. A testimony of their importance to him and, especially, of James Thomas Wilson's influence on his outlook, he would record:

The crowded medical course, the duties as Demonstrator in the Anatomy Department, as Secretary of the Sydney University Medical Society for both graduates and students, as Tutor in Biology at St Andrew's College and, ultimately, its Acting Vice-Principal, left little spare time for the initiated research. The treasures beyond assessment were the weekly comings together for supper and the flow of information and viewpoints between venerated mentor and adoring disciple, through those shocking war-filled years, till graduation severed those contacts in August 1917.<sup>159</sup>

Dart was often to recall his 'intimate and treasured association'<sup>160</sup> with his mentor and, whenever at a crossroad, remember Wilson's use and emphasis of some wise Shakespearean words from *Hamlet*, 'to thine own self be true'.<sup>161</sup> Without doubt, Wilson left an everlasting impression on Raymond Dart who much later penned, 'His influence on me was so great

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157 *The St Andrew's College Magazine*, University of Sydney, no. 16, Nov. 1918, pp. 11, 19.

158 *ibid.*, p.19.

159 R. A. Dart, 'Recollections of a Reluctant Anthropologist', p. 419.

160 Dart with Craig, *Adventures with the Missing Link*, p. 26.

161 *ibid.*, p. 27.

that even today I often find myself guided by the standards he implanted in my young mind'.<sup>162</sup>

As the devastating war continued its havoc in Europe, and in which thousands of Australian lives were sacrificed, long lists of casualties and obituaries continued to be published in the *Medical Journal* and *Hermes*. There would be forty-four deaths from the University of Sydney staff and students and from the Royal Prince Alfred Hospital.<sup>163</sup>

Raymond Dart's wish to serve his country became reality for him on 28 March 1918. He was twenty-five years old. Youth's unfolding into manhood had now fully taken place - physically now he was 1.75 metres tall and weighed nearly 72 kilograms.<sup>164</sup> As he packed his kit bag his thoughts turned inward upon himself, wondering about his fate now taking so unexpected a turn.

About one thing only, on this eve of his departure, did Dart feel sure. His ambition to pursue a career in neurology had never wavered. As he had determined upon concluding his studies at the University of Queensland five years earlier to follow neurology, so did he now resolve with ever greater purpose:

This had long since become my main life objective; and the dream-world already spontaneously fashioned was to join Dr Grafton Elliot Smith after the war years were over and to spend a lifetime alongside him finding out whatever one could, of what one needed to know about the head and its brain.<sup>165</sup>

Would his dreams of neurological medical research with this famous scientist ever be fulfilled?

## Army Days

Dr Raymond Dart resigned his position of Resident Medical Officer at

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162 *ibid.*, p. 26.

163 Sefton, Cheng & Thong, p. 23.

164 Australian Archives, Canberra, ACT Regional Office, Dept. of the Army, Personnel Dossiers for First Australian Imperial Ex-service Members, Commonwealth Records Series B 2455, Attestation Paper.

165 R. A. Dart. 'Recollections of a Reluctant Anthropologist', p. 419.

the Royal Prince Alfred Hospital in Sydney and joined the First Australian Imperial Forces.<sup>166</sup> (fig. 33).

Dart was granted the rank of Captain to serve in the Australian Army Medical Corps of the AIF (Australian Imperial Forces), General Reinforcements for the United Kingdom.<sup>167</sup> In addition to the vital statistics called for Dart answered additional information sought, that of whether he could ride a horse (mounted troops were much in use then) and of any proficiency in languages. His Senior Standard in German<sup>168</sup> seems to have been put to good use by the Army, as after spending much time in the huge main Army camp at Liverpool, 32 kilometres west of Sydney, he then was posted for some time to the Internment Camp at Bourke in the far west of New South Wales, some 780 kilometres from Sydney.<sup>169</sup>

Captain Dart had hoped to get overseas as quickly as possible after enlisting, though found he had to spend four months of service in Australia before doing so.<sup>170</sup> He made time to farewell all his friends in Sydney and while visiting the St Andrew's College learned of the sad accidental death in London on 30 June 1918 of his collegiate friend and medical graduate, Captain Roy Sillar. Sillar was thrown from his bolting horse, just one week before being posted to France. Dart also learned of others from St Andrew's College who had either been killed, injured or were missing in action.<sup>171</sup>

On his visit to Queensland to farewell his family at 'Medeba' in Blenheim, Dart took the opportunity to visit his old school at Ipswich, where ex-pupil, J. L. Bowling remembered he came very early one morning to do

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166 Australian Archives, Canberra, ACT, Regional Office, Department of the Army, Commonwealth Series B 2455, Personnel Dossiers for First Australian Imperial Forces Ex-Service Members, CM Form A 22 (Revised I. 7.14); *Ipswich Grammar School Magazine*, vol. 10, no. 17, June 1925, p. 19, incorrectly states Dart's enlistment year as 1916; Phillip V. Tobias, *Dart, Taung and the 'Missing Link'*, The Institutes for the Study of Man in Africa, Johannesburg, 1984, p. 4, states Dart's enlistment year as 1917, as also does F. Wheelhouse in *Raymond Arthur Dart: A Pictorial Profile*, p. 26.

167 Australian Archives, ACT, B 2455, Addenda to CM Form A. 22.

168 *ibid.*

169 *Ipswich Grammar School Magazine*, vol. 10, no. 17, June 1925, p. 19.

170 R. A. Dart interview by F. Wheelhouse, Johannesburg, 7 Feb. 1973.

171 *The St Andrew's College Magazine*, University of Sydney, no. 16, Nov. 1918, p. 7.

so.<sup>172</sup> Not long after, Dart was to hear of the shocking death on 5 April 1918 of an old classmate, Waldie Fischer, blown to smithereens by a stray shell while in France. Fischer had served as a private in the 42nd Battalion and after notable service at Armentières, Messines and Ypres was commissioned a lieutenant.<sup>173</sup> Dart was to learn as well of Bowling's death from the same battalion soon after Fischer's, only a short time after writing to the Headmaster of Fischer's demise.<sup>174</sup> By war's end, of the 204 Old Boys who served from Ipswich Grammar School, thirty-two were to make the supreme sacrifice, several of whom had won the DSO (Distinguished Service Order), the Military Medal and the Military Cross.<sup>175</sup>

As Dart embarked on 27 July 1918 on the A30 HMT *Borda* in Sydney Harbour,<sup>176</sup> thoughts of his friends and family were much in his mind, as was the war front for which he was heading. To his pleasant surprise he met on board this ship. George Saxby, a fellow medical student and graduate during 1914-1917 at the University of Sydney.<sup>177</sup> On the long, hazardous voyage to England where the contingent landed in London on 27 September 1918,<sup>178</sup> Dart, Saxby and other medical staff officers aboard ship were hard-pressed treating various ailments of the troops, particularly a severe outbreak of meningitis.<sup>179</sup> Respite of a few days' leave at the port of Durban, South Africa en route was most welcome for Dart and Saxby who appear to have waived Army regulations while enjoying their break:

On our way over to Europe when our troopship docked in Durban, my friend George Saxby and I had had the temerity to travel inland by train to Pietermaritzburg and back to visit some of his relatives who had settled there. We had admired the picturesque beehive-shaped huts of the Zulus inhabiting the fantastic view over the Valley of a Thousand Hills as far as our eyes could reach, but neither of us had found in Durban or Capetown attractions superior to those of the Australian capital cities we had lived in or visited.<sup>180</sup>

172 *Ipswich Grammar School Magazine*, new series, vol. 9, no. 6. Dec. 1918, p. 24.

173 *ibid.*, p. 24, - reproduced letter, no date, from Lt. Col. A. Woodcock, O. C. 42nd Battalion to Rev. C. Fischer advising of his son's death.

174 *ibid.*, p. 24, letter dated 22 Apr. 1918 from J. L. Bowling in France to Headmaster.

175 Allsopp, *A Centenary History of the Ipswich Grammar School 1863-1963*, p. 52.

176 Australian Archives, ACT, B. 2455, Army Form B. 103.

177 *University of Sydney Calendar 1914*, p. 465; R. A. Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol 8, no. 3, June 1972, p. 173.

178 Australian Archives, ACT, B 2455, Army Form B. 103.

179 R. A. Dart, 'Nasal Hygiene', *The Leech*, June 1936, p. 1.

180 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p 173.

At Cape Town another few days' leave were granted. While there Dart, with his companions, took advantage of visiting the museums and places of interest and met a minister of religion, Suffragan Bishop Gaul who discussed with Dart his hobby of archaeology, and his particular interest in the Zimbabwe Ruins in Southern Rhodesia (now Zimbabwe).<sup>181</sup> Dart would never have then imagined that in later years his own research work in relation to the Zimbabwe Ruins would help provide new clues to their mystery.

Having disembarked in London on 27 September 1918, Captain Dart was attached to the AIF (Australian Imperial Force) as a Medical Officer to Army Administration Headquarters in London for eleven weeks.<sup>182</sup> It was during this period he is thought to have served at Salisbury Plain camp,<sup>183</sup> (not specified as such in Army Records). At that time the influenza outbreak continued its disastrous scourge of life as the most destructive in history, claiming twenty million lives worldwide.<sup>184</sup> In attempting to deal with its prevention and containment among his troops at his camp, Dart introduced his own innovative methods:

It was in camp on Salisbury Plain during the [influenza] epidemic that I first deliberately practised a systematic nasal hygiene of all men reporting sick. A nasal spray of olive oil, menthol and eucalyptus and a gargle of potassium permanganate was administered by my Staff Sergeant irrespective of temperature or pulse condition. Without having adequate comparative figures I was satisfied with the general fall-off in incidence of those succumbing to the epidemic in the regiments for which I was responsible.<sup>185</sup>

Though the war ended with the Armistice on 11 November 1918, various units were still being sent to the Continent to service the army personnel still there in their thousands awaiting exit and demobilization. Dart was detailed for duty in France on 22 December with the 14th Engineers Battalion and arrived on 6 January 1919 at Le Havre AIF (Australian Imperial Force) Headquarters as Medical Officer with this battalion, serving there for six weeks. On closure of this depot he was

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181 Dart, 'Áfrican Serological Patterns and Human Migrations', Presidential Address, 1950, to the South African Archaeological Society, Cape Town on 6 Mar 1951, *The South African Archaeological Society*, Cape Town, iii; Dart with Craig, p. 27.

182 Australian Archives, ACT, B 2455, Army Form B 103.

183 Dart, 'Nasal Hygiene—A Contribution to the Prevention and Control of Nasal Infection', *The Leech*, June 1936, p. 1.

184 *The New Encyclopaedia Britannica*, 15th edn, vol. 6, 1994, p. 312.

185 Dart, 'Nasal Hygiene—a Contribution to the Prevention and Control of Nasal Infection', p.1.



transferred to a convalescent depot at Camp No. 3, in the area on 8 April and was 'struck off strength' at this camp on 12 April, again by its closure. With leave then granted him from 3 May, Dart made the most of his fourteen days and on his return to camp wrote to Professor Wilson of his worthwhile trip throughout France, Belgium, Germany and Luxemburg.<sup>186</sup> In Strasburg, Germany, his visit to the Medical School and Hospital with its excellent anatomy museum proved for him a highlight. Impressed by preserved specimens of many years retaining still their natural colour, he sent the formula to Wilson. Other specimens mounted in glass and the foetal collection of all ages gained merit from Dart. Notwithstanding his medical training, he found specimens from Russian soldiers who had died in Germany of typhoid, ulcers and dysentery, 'terrible cases even in bottles'. That Dart was unimpressed with 'their art of dissection', and saw 'nothing better there than in our own',<sup>187</sup> would have warmed Wilson, prided as he was of his stringent requirement of students' excellence in this technique.

From this letter penned to Wilson it is clear that correspondence was underway concerning the possibility of his soon leaving the Army in England, albeit with frustration. Not only had Dart written to Headquarters, but there were deliberations between Professor E. R. Holme and AMC (Australian Military Command) Headquarters and letters from Professor Grafton Elliot Smith each of much comment and recriminations, producing in the end a promise he would be out by June.<sup>188</sup> Yet Dart would have to wait much longer for his discharge and would learn 'a lesson of the barricade of red tape and failure to appreciate individual claims by the present Army system'. Such a lesson, however, he considered 'worth experiencing'.<sup>189</sup> It is interesting to note that as Elliot Smith was head of anatomy at Manchester University, Dart expressed to Wilson his hope that by the time his letter reached him in Sydney he would 'be in Manchester and at work once more'.<sup>190</sup> His hopes ran high when on 11 June 1919 he was 'marched out to England to be disembarked at Southampton, with fourteen days more leave,

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186 University of Sydney Archives, J. T. Wilson Family Archives. P 162. ser.5 item 2, letter from Raymond A. Dart to J. T. Wilson from No. 3 Reception Camp, Le Harve, France, 14 May 1919.

187 *ibid.*

188 *ibid.*

189 *ibid.*

190 *ibid.*

after which he was to report to the AIF (Australian Imperial Force) Headquarters in London.<sup>191</sup>

In England also was his brother Percy, earlier a victim in France of phosgene gas warfare.<sup>192</sup> The brothers eagerly decided to take the opportunity to visit Mount Shannon in Ireland, the home of some of their forebears.<sup>193</sup> An Irish-Scottish bonding had evidently gripped Dart's heart, one that played a great part in his emotions, a tie that probably helped to sustain him midst the later rebuffs in his public life and, at the same time, offered security within his private realm, the all-important world of his family. In later years Raymond Dart, as did other members of his family, made trips back to Mount Shannon in Ireland, Devon in England and to places in Scotland where their other forebears had once dwelt.<sup>194</sup>

Servicemen from the United Kingdom, her colonies, the United States of America and a host of other lands now awaited demobilisation after returning to their own countries following the Armistice which stemmed the wholesale bloodshed during the war years of 1914-1918. In treating the injured and dying, Dart himself realised the enormous waste of life and impairment of health and caused his curiosity to arise as to whether cruelty to his fellow kind might be an inherited trait! His consequent deliberations on this aspect would prove heretical. In later years few scientists would agree with his assessment that injuries to fossil baboon skulls had been deliberately inflicted by their proto-human contemporaries, and likewise on their own kind; that humans on their path from apedom, were vicious and predatory.<sup>195</sup> While Warrant Officer Percy Dart would soon set sail for demobilisation in Australia, his brother Captain Dart, unexpectedly would not. Quite unforeseen then by either, Raymond's destiny lay in other lands.

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191 Australian Archives, ACT, B 2455, Army Form B 103.

192 Harold W. Dart, *Happenings Historic, Heroic and Hereditary*, p. 104.

193 Harold W. Dart, p. 101; Diana Dart Graham, interview by Kay Smithford, Spartanburg, SC, USA, May 1995.

194 Harold W. Dart, pp. 102, 104; Eliza Ann Dart, pp.63-68.

195 Raymond A. Dart, 'The Makapansgat Australopithecine Osteodontokeratic Culture, (offprint) in J. D. Clark & S. Cole (eds), *Proceedings of the Third Pan-African Congress on Prehistory Livingstone, 1955*, Chatto and Windus, London, pp. 161-71; Raymond A. Dart, 'Cultural Status of the South African Man-Apes', from *The Smithsonian Report for 1955*, Smithsonian Institution, Washington, 1956, pp 317-38; Dart with Craig, pp. 106-19; R. A. Dart, 'The Predatory Transition from Ape to Man', (reprint) from *International Anthropological and Linguistic Review*, vol. 1 :4, 1953, pp. 201-18.

Thus while awaiting repatriation, Raymond Dart must have thought of little else but his future in medicine, his ambition to pursue neurology. He could not help but be stirred, meanwhile, by the fact that his greatest hero in medical science, Grafton Elliot Smith, worked at hand in Manchester University. Dart himself had never lost his burning desire one day to work alongside this genius in the field of neurological research. His correspondence with Wilson reveals his hopes and efforts to obtain a post-war medical position in England.<sup>196</sup> Wilson's letters show the on-going contact between himself and Grafton Elliot Smith since the latter's departure from Sydney in 1896. Many of these reveal a treasure of information about each other's movements, the politics of academia, research and information concerning associated colleagues, Dart among them - Wilson advising of his joint research with this talented young doctor.<sup>197</sup> Fortuitously Dart learned that anatomists were at a premium in the United Kingdom, and that Elliot Smith was to take over the Chair of Anatomy at University College, London and was seeking a Senior Demonstrator. Dart was in fact asked if he would accept this post.<sup>198</sup> He indicated Wilson's possible implication:

Doubtless depending on J. T. Wilson's favourable estimate, he [Elliot Smith] forthwith shocked me and doubtless everybody associated with the Anatomy Department there by appointing me to its next senior post of Senior Demonstrator.<sup>199</sup>

Elliot Smith's decision on this appointment was verified by him in a letter to Wilson several months later:

You know that the anatomical field has been harrowed ten times over during the last three months so that no suitable men with any training are left. So I took the bold course of making Dart my Senior Assistant. He is shaping well.<sup>200</sup>

With his application confirmed for the position Dart was ecstatic and confessed, 'My knees went weak at the thought of pretending to be Elliot Smith's second-in-command'.<sup>201</sup> One impediment loomed ominously in his

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196 University of Sydney Archives, J. T. Wilson Family Archives, P 162, ser. 5, item 2, gen. corres. 1900-1920, letter from R. A. Dart to J. T. Wilson, 14 May 1919.

197 *ibid.*, letter from J. T. Wilson to Grafton Elliot Smith, 4 Sept. 1919.

198 Dart with Craig, *Adventures with the Missing Link*, p. 27.

199 Dart, 'Recollections of a Reluctant Anthropologist', *Journal of Human Evolution* 2, 1973, p. 419.

200 University of Sydney Archives, J. T. Wilson Family Archives, P 162, ser. 5, item 2, Grafton Elliot Smith letter to J. T. Wilson, 15 Sept. 1919.

201 Dart with Craig, p. 27.

way. Would demobilisation in England be possible? Enquiries by Dart established that discharge elsewhere than in Australia would be granted sparingly, and only under special circumstances. Importantly, the interests of Australia, rather than of the individual would have first consideration.<sup>202</sup>

Hence the young medico began the frustrating task of filling in the endless number of forms required for this purpose. The first form, for demobilisation in England he signed in London on 13 June 1919. His reasons were stated briefly and emphatically:

I intend to become an anatomist and have been promised an appointment as Senior Demonstrator at University College London under Professor Elliott [sic] Smith for 12 months dating from Sept 1 1919. I cannot obtain similar training or opportunity for study in Australia though it is my intention to return there in 4-5 years time.<sup>203</sup>

Judging by his mis-spelling of Elliot Smith's name, three line-through errors and lack of punctuation, he must have been in a highly excited state when applying for this special consideration.<sup>204</sup>

It appears that the Major General in accepting Dart's application for demobilisation and recommending it, waived protocol aside in his letter to Administrative Headquarters of 14 June 1919<sup>205</sup> by stating he had received favourable correspondence on Dart from Elliot Smith, when, in fact, he had no such letter in hand. This letter was received much later and dated 30 July 1919.<sup>206</sup> (fig. 34). Nevertheless it does appear that the Army authorities made sure they actually had Elliot Smith's letter on file before approval was officially granted on 8 August 1919 when Dart's papers were stamped accordingly.<sup>207</sup>

Precious time was ticking away. How delighted, how relieved Dart

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202 Commonwealth Archives, ACT, B 2455, Repatriation and Demobilisation Dept., AIF, Extract from General Instructions No. 2, Annexure C, *Vide Para* 14, Instructions Regarding Application for Discharge elsewhere than in Australia, Item 1.

203 Australian Archives, ACT, B 2455, attached memo to AIF, Form No. 535-3552, 1930 / 5 / 63, Dept. of Repat. and Demob. Application for Discharge in Country other than Australia.

204 *ibid.*

205 Australian Archives, ACT, B 2455, attached memo to AIF Form No. 535-3552, JA/RHS, A 68411, Admin. Headquarters AIF, 16 June 1919, Central Reg. Branch 1930 / 5 / 63, memo to D1 from DMS, AIF, dated 14 June 1919.

206 Grafton Elliot Smith, The University Manchester (not addressed to one person in particular), 30 July 1919.

207 Australian Archives, ACT, B 2455, AIF Form 535-3552, 1930 / 5 / 63.

must have been to sign his Release Form on 18 October 1919 stating that his discharge had actually been effective from 4 September 1919.<sup>208</sup> It seems that on request, for it does not appear to have been mandatory, Dart agreed to be appointed a temporary Captain in the Regular Forces of the British Army, which advice the authorities sent to his father in Australia on 23 October 1919.<sup>209</sup>

Having complied with all the requirements for his discharge in the United Kingdom and gained it, Raymond Dart must have set off with a spring in his step to his new living abode at 58 Argyle Road, West Ealing, London.<sup>210</sup> There he would rejoice in and with hurried pleasure prepare for his newly-found profession in Anatomy and to hopefully pursue his long-dreamt of research into aspects of neuro-anatomy.

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208 Australian Archives, ACT, B 2455, Release Form 2R-1000-9, 18-12661, By Discharged Member of the Australian Imperial Force in England.

209 Australian Archives, ACT, B 2455, memo 20 Oct. 1919 from OIC Base Records, Victoria Barracks, Melbourne, Victoria to S. Dart, Esq. 'Medeba', Blenheim, via Laidley, Qld, enclosing AIF Receipt for Document from Defence Dept - Commission Form, signed and received S. Dart, 31/10 /1919, C. 12222, Dart AAMC to temp. Capt. in the Reg.Forces of British Army

210 Australian Archives, ACT, B2455, Extract from General Instructions No. 2. Annex. C. *Vide Para 14.*

## CHAPTER 3

### ENGLAND—AMERICAN INTERLUDE

To work under Professor G. Elliot Smith proved Raymond Dart's 'student dream come true'.<sup>1</sup> Dart soon realised that his new chief was not only a genius in his own field, but one of the most pleasant human beings for whom he had ever worked. The tall, distinguished scientist with ruddy complexion and snow-white hair proved far removed from the 'woolly-minded, innocent genius of fiction'.<sup>2</sup> Dart recognised that Elliot Smith was in every sense a man of the world, a great raconteur and popular with his colleagues and assistants who could usually rely on him to attend and enliven their daily tea parties.<sup>3</sup>

Elliot Smith had arrived from Manchester University to take up his appointment at University College, London, during the first week of August 1919.<sup>4</sup> Dart's own position as Demonstrator had been confirmed on 1 July, though he was not released from the AIF (Australian Imperial Forces) until 4 September 1919.<sup>5</sup>

In his correspondence to the Australian Army officials concerning Dart's demobilisation, Elliot Smith had stated that he had been 'duly appointed Lecturer in Anatomy and Senior Assistant to the Professor of Anatomy',<sup>6</sup> seemingly pre-empting in his mind the young Australian's future elevation. He evidently urged Dart to apply for the position of 'Teacher of Human Anatomy', and evidence shows that Dart responded.<sup>7</sup> Though he did not attain this status at once, Dart's range of responsibilities was extended to include that of Demonstrator in Anatomy and Curator of the Anatomical Museum with the opportunity to teach in a new field, that of anthropology.<sup>8</sup> This subject in which Elliot Smith was intensely interested,

1 Dart with Craig, *Adventures with the Missing Link*, p. 28.

2 *ibid.* p. 28.

3 *ibid.* p. 28.

4 Australian Archives, ACT, Regional Office, Commonwealth Series B 2455, Personnel Dossiers for Australian Ex-Service Members; Elliot Smith's letter to AIF Dept. of Demobilisation and Repatriation, London, 39 July 1919; University College Meeting, Minute 232, 1 July 1919.

5 Australian Archives, Series B 2455; R. A. Dart Army Release Form, 18 Oct. 1919.

6 Elliot Smith's letter to AIF, London, 30 July 1919.

7 University College, London, Committee Meeting, Minute 9C, 4 Nov. 1919.

8 *ibid.*, Committee Meeting, Minute 7G, 6 Jan. 1920.

now fired enthusiasm in Dart.<sup>9</sup>

During 1919 and keen to place his protégé before the public, Elliot Smith 'enveigled'<sup>10</sup> Dart into giving his first public lecture in London before the Anatomical Association. Meandering through the London fog before this lecture, Smith challenged Dart to deliver it without notes. A daunting task for so inexperienced a speaker! Some years had elapsed since Dart had addressed the subject of Froiep's ganglion with Professor J. T. Wilson at the University of Sydney.<sup>11</sup> But Dart responded with satisfactory results.

The occasion of his talk marked his first opportunity of meeting with the chairman of the Anatomical Society, none other than the renowned and formidable Arthur Keith, (knighted in 1921), then also Conservator of the Museum and Hunterian Professor of the Royal College of Surgeons, Secretary of the Royal Institute and holder of its Fullerian Chair of Physiology, a man of immense stature and influence in Medicine and Science.<sup>12</sup> Dart could not know what a dramatic effect this eminent scientist would have upon his own immediate career; nor could he foresee that a highly improbable moment would come when he, himself, would spark off a world-wide scientific debate with Arthur Keith, a daunting adversary.

One of Dart's first duties at the University College was to give classes in which, much to his surprise, demobilised majors, colonels and others of senior rank in the Army Medical Corps attended, all come to review their anatomy for Fellowship Examinations of the Royal College of Surgeons.<sup>13</sup> Dart's assignment was not without its embarrassments.

From Melbourne, Australia, had arrived Lieutenant Colonel W. W. Woollard, a doctor greatly experienced in medical practice, but now a student in young Dart's class. Unassisted by outside funding, and with a wife to support, Woollard found it difficult to meet the costly fees from out of

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9 Dart with Craig, *Adventures with the Missing Link*, pp. 32, 48; Arthur Keith, *New Discoveries Relating to the Antiquity of Man*, Williams & Norgate Ltd., London, 1921, p. iii.

10 Raymond A. Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, June 1972, p. 172.

11 R. A. Dart, 'Recollections of a Reluctant Anthropologist', *J. Hu. Evol.*, 2: 1973, pp. 419, 421; Tobias, *Dart, Taung and the 'Missing Link'*, p. 5.

12 Arthur Keith, *An Autobiography*, Watts & Co., London, 1950, pp. 286, 400, 457; Tobias, *Dart, Taung and the 'Missing Link'*, p. 5.

13 Dart with Craig, *Adventures with the Missing Link*, p. 27; Dart, 'Recollections of a Reluctant Anthropologist', *J. Hu. Evol.*, 2, 1973, p. 419.

his own pocket. Dart alerted Elliot Smith to the Lieutenant Colonel's situation, and offered to stand down in Woollard's favour because of his vastly superior medical experience. Even as he reassured Dart of the security of his own position, Elliot Smith at once remedied matters. He established yet another Demonstrator position, and, later, a sub-deanship for Woollard.<sup>14</sup>

Dart's concern for those in need became a notable feature of his character throughout his life, also a zeal for sharing knowledge. Amongst his students were men of diverse professions, including artists wanting to study the make-up of the human body. One such man, Colonel Winder, trained earlier at Sandhurst Military College, had turned his hand to art while in hospital recovering from severe war wounds. An art critic of the South African newspaper, the *Rand Daily Mail*, recognised his talent and was responsible for Winder's prompt engagement as the paper's cartoonist. A first requisite, Winder realised was to attend anatomy classes at University College. He later recalled how Elliot Smith delivered the lectures with young Dart as a follow-up 'demonstrating all manner of specimens from the long zinc pickle tubs and revealing facets of them in an absorbing and most erudite manner'.<sup>15</sup>

Elliot Smith soon allotted Dart a wide range of problems. These embraced carmine-stained forebrain sections of the *Notoryctes* (marsupial mole of Australia), and the natural endocranial cast of a primitive whale from the Eocene deposits of the Fayūm in Egypt.<sup>16</sup>

So my most vivid memory of the London (1919-20) period prior to the publication of my first scientific paper in 1921 [*sic.* 1920] was a devastating red-pencilling by Elliot Smith of my first draft in manuscript together with a presentation copy of *The King's English!*<sup>17</sup>

When Dart first arrived in London he had at once sensed that as a colonial with an Australian accent, he must do something to modify his vowels for the lecturing he might undertake in England. Ever a realist, he undertook a course in elocution which included training in how to throw

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14 Dart, 'Recollections of a Reluctant Anthropologist', *J. Hu. Evol.*, 2, 1973, p. 420; Dart with Craig, *Adventures with the Missing Link*, p. 28.

15 Colonel Winder, interview by F. Wheelhouse, Johannesburg, 11 Mar. 1973.

16 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol. 8, no.3, June 1972, p. 172.

17 *ibid* 172.



one's voice to the back of a hall, loud-speaking equipment not yet generally used. A course he never regretted, Dart sometimes recommended it to his pupils.<sup>18</sup>

Clamour grew by ex-service medical men for higher qualifications in England. Lieutenant-Colonel Joseph Lexden Shellshear, DSO (Distinguished Service Order), Australian-born and graduate of the University of Sydney, was one keen to complete his FRCS (Fellowship of the Royal College of Surgeons). When demobilised on 4 January 1920<sup>19</sup>, Shellshear gained according to Dart the position of Senior Demonstrator and Chief Assistant to the Professor of Anatomy at St Bartholomew's Hospital in London.<sup>20</sup> Shellshear's records, however, only list him as being at University College.<sup>21</sup>

Shellshear's war record impressed. On 5 October 1915 he had joined the 5th Field Artillery Brigade of the AIF (Australian Imperial Forces) in Victoria. Next he joined the British Expeditionary Force in Egypt, after which he served in France in several field artillery units. Twice Mentioned In Despatches by Sir Douglas Haig, Shellshear was awarded the DSO for *outstanding bravery in January 1918*. He went on to serve with the Australian Medical Corps in Europe and in England. Upon demobilisation in 1920, he was thirty-five years old.<sup>22</sup> At such time Dart met him, and a vibrant friendship immediately sprang up between the two. Dart and Shellshear shared a London flat with Shellshear's brother and another medical associate.<sup>23</sup>

Almost at once they began collaboration in challenging Wilhelm His's doctrine 'that the neural tube was the source of the nervous system'.<sup>24</sup> The younger of the team by eight years, association with Shellshear had a profound influence on Dart:

Friendship with Joe Shellshear in particular had revolutionary effects upon myself. My somewhat wider acquaintance with zoology and

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18 Diana Dart Graham interview by Kay Smithford 14-18 Jan. 1994 at Spartanburg, SC, USA, as advised in a letter to F. Wheelhouse 30 May 1995.

19 Australian Archives, Personnel Army Records B 2455, Release Document, Shellshear, 4 Jan. 1920.

20 R. A. Dart letter to Patricia Morison, Canberra 29 Aug. 1983.

21 *Who's Who*, British and Australian 1955; *Knox Directory* 1951.

22 Australian Archives, B 2455, CM Form A 22; Casualty Form - Active Service AIF Form 535; Base Records AIF letter 6 July 1917.

23 R. A. Dart letter to P. Morison, 29 Aug. 1983.

24 Dart, 'Recollections of a Reluctant Anthropologist', *J Hu Evol.*, vol. 2, 1973, p. 419.

histology supplemented his far more extensive experience of physiological function gained during medical practice.<sup>25</sup>

Soon their bond of friendship would be further cemented. At the end of 1920, visiting Rockefeller Foundation representatives from the United States of America sought an establishment on which to bestow a financial gift in recognition of the British medical sciences' contribution during the Great War. The University College and Hospital became beneficiaries for its first huge grant.<sup>26</sup> Elliot Smith was invited to visit the United States to study its two-year fellowship system in medical schools. On his return he modified their scheme to allow two students each to study for twelve months to suit his own students. His ideas were accepted.<sup>27</sup>

During their chief's absence abroad, Dart and Shellshear won permission from Mrs Elliot Smith to tidy up her husband's study, an area of general chaos with priceless volumes strewn about the floor. On his return an anxious Dart apologised for any inconvenience restoration of order might have provoked. Elliot Smith replied, 'Don't worry yourself; my journeys of discovery have reminded me of many things in my library I had completely forgotten'.<sup>28</sup>

Elliot Smith then cast his decision for two Fellowship winners. Dart and Shellshear proved the recipients.(fig. 35). Dart adjudged they were his 'guinea pigs of this scheme of a one-year fellowship'.<sup>29</sup> He further surmised that Elliot Smith would not only have considered their friendship but also their temporary absence from the scene might lessen the worry of his medical colleagues regarding their view on this subject.<sup>30</sup> As later determined, Elliot Smith had in mind even far more far-reaching and significant plans for his two incorrigible young medicos.

In respect to their joint heresy Professor Phillip Tobias stated years later, 'Their challenge to His's doctrine was one of the first of Dart's heresies in a long life in which he generated many shocking and non-conformist

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25 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol 8, June 1972, p 172.

26 Dart, 'Recollections of a Reluctant Anthropologist', p. 419.

27 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 172; Dart with Craig, *Adventures with the Missing Link*, p. 28.

28 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 174.

29 Dart, 'Recollections of a Reluctant Anthropologist', p.420; Dart with Craig, *Adventures with the Missing Link*, p. 28.

30 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 172.

notions!<sup>31</sup> Wilhelm His, Swiss-born anatomist and embryologist created methods for studying embryonic origins of different types of animal tissue (histogenesis). In 1886 he discovered 'that each nerve cell stems from a single nerve cell was essential to the development of the neuron theory, which states that the neuron, or nerve cell, is the basic unit of the nervous system'. He was famous also for his invention of the microtome for preparing thin sections of tissue for study under the microscope.<sup>32</sup> In time some aspects of His's ideas which Dart and Shellshear challenged were superseded as would be those of Dart's and Shellshear's.

Dart was granted unpaid leave of absence for the 1920-21 session to take up his Rockefeller Foundation Fellowship grant and go to the United States.<sup>33</sup> Accompanied by Shellshear and his wife, Hildred,<sup>34</sup> he and Shellshear were the first two foreigners to enjoy the privilege of these Fellowships. They left London on 24 September 1920, crossing to France to take in the sights before sailing for America in October aboard the *S. S. Lorraine*.<sup>35</sup> Dart enjoyed further reason to celebrate. His first medical paper on the brain of the Australian marsupial mole also appeared in print that month.<sup>36</sup>

For the first six months in the United States, Dart and Shellshear were separated, studying and teaching. Dart undertook histology and embryology with Professor R. J. Terry at the Washington University, St Louis, Missouri. Shellshear, on the other hand, undertook his programme of embryology at Johns Hopkins University and the Carnegie Institution with Louis H. Weed and George Streeter. After this they rejoined company and visited American Anatomy Departments of 'the chief mid-western and north-eastern American medical schools of both the United States and Canada'.<sup>37</sup> Woods Hole Marine Biological Station, Cape Cod, Massachusetts was to be their centre

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31 Tobias, *Dart, Taung and the 'Missing Link'*. p. 5.

32 *The New Encyclopaedia Britannica*, 15th edn. vol. 5, p. 945.

33 The University College, London, Committee Meeting, Minute, 250, 29 June 1920.

34 Ann Macintosh letter to R. and M. Dart, 15 Dec. 1978 mentions items from Shellshear's Diary, 24 Sept. 1920 to 23 Mar. 1921.

35 *ibid.*

36 Ilse Fischer, 'The published works of Raymond Arthur Dart', Johannesburg, University of the Witwatersrand, 1969, 1. R. A. Dart, 'A Contribution to the morphology of the corpus striatum', *J. Anat.* vol. 55, Oct 1920, pp.1-26.

37 Dart, *Recollections of a Reluctant Anthropologist*, *J. Hu. Evol*, vol. 2, 1973, p.420, Dart with Craig, *Adventures with the Missing Link*, p. 28.

for research for their last three months.<sup>38</sup>

During their year of exhilarating study and research their combined most notable event of 1921 occurred in Philadelphia. There on 23 March their paper rebutting Wilhelm His's doctrine was delivered at the American Association of Anatomists. Its substance in brief Dart described as 'declaring our neurogenetical heresy about the peripheral origin of nerve cells in all animals (from coelenterates upwards) and in all tissues (whether endo-, ecto- or meso-dermal).<sup>39</sup> Shellshear's diary recorded the attack on them by 'Ross Harrison and Stockard'.<sup>40</sup> Later in happier atmosphere at Woods Hole they would defend and be encouraged in their neurological heresies.<sup>41</sup> Thirty-five years later, one who knew them there in 1921 recalled the impression they both made and 'how Dart, in his rich and powerful voice, had taught the biologists at Wood's Hole to sing "Waltzing Matilda".<sup>42</sup> In fact Dart had delighted others similarly at several centres of learning during his American travels introducing other Australian songs.<sup>43</sup> On one of these occasions a long friendship was begun with an Australian singer who later returned to Sydney after which they kept in touch by correspondence.<sup>44</sup>

Each Fellow in 1921 experienced his own individual highpoints. At Cincinnati Medical School, Raymond Dart met the most attractive and kind-natured Dora Tyree. Already a Bachelor of Arts holder, she was now Instructor in Anatomy while continuing her own medical studies at this medical school.<sup>45</sup> In June, Dart and the Shellshears left by train for Woods Hole. Distressed over farewelling Dora, Dart's emotional mood made him a difficult travelling companion. Shellshear was hardly surprised then, when at the train's first halt, Dart sprang up, collected his suitcases and declared he

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38 Dart, 'Recollections of a Reluctant Anthropologist', p.420; Dart with Craig, *Adventures with the Missing Link*, p. 28.

39 Dart, 'Recollections of a Reluctant Anthropologist', p 419; Dart letter to P. Morison 29 Aug. 1983.

40 Ann Macintosh letter to R. and M. Dart 15 Dec. 1978, referring to Shellshear's Diary entry 24 Sept. 1920 to 23 Mar. 1921.

41 Dart, 'Recollections of a Reluctant Anthropologist', p. 420.

42 Tobias, *Dart, Taung and the 'Missing Link'*, p. 7.

43 Robert J. Huettner, Woods Hole, letter to Kay Smithford 5 Aug. 1994.

44 Diana Dupain of Castlecraig, Sydney, interview by F. Wheelhouse. Diana Dupain's mother was the singer friend who met Dart in the USA and who recalled correspondence between her mother and Dora and Raymond Dart in the 1920s.

45 Dart with Craig, *Adventures with the Missing Link*, p. 31.

was going back to Cincinnati to fetch Dora.<sup>46</sup>

At Woods Hole, Dora was also registered on 1 June to undertake research work during this three month period,<sup>47</sup> in which time romance also further blossomed. Raymond and Dora were married at Woods Hole by the Reverend Irving A. Flint on 3 September 1921, Dart then twenty-eight years old and his bride one year younger. (fig. 36). Dora whose previous marriage ended in divorce, (though no known reasons for this are registered), had been born in Lexington, Kentucky and grew up in Virginia with her parents William H. Tyree and May Tyree (*née* Rhodes).<sup>48</sup> The Rockefeller Fellowship's term ended, the newly weds sailed to England on their honeymoon, headed for London, now Dart's legal residence and, by adoption, his home, where his job awaited him, and where he expected to carve out a highly successful career in medical science.

Only one factor had cast shade over Dart's happiness before leaving Woods Hole, Joseph Shellshear's recent absence from the scene. Shellshear had been appointed Professor of Anatomy at the new Medical School in Hong Kong, and he and Hildred had taken leave of Woods Hole almost immediately.<sup>49</sup> Although delighted for Shellshear's fine opportunity, Dart felt shorn of a valuable personal and professional friend. He later explained their complementary association:

He did not hesitate to discuss philosophical matters with me because his confrontation with evolutionary questions differed from my own and during our youth. But that did not prevent us sharing thoughts and experiences; I doubt if he had trusted anyone else to the extent he trusted me.<sup>50</sup>

Their joint paper entitled 'The Origin of the Motor Neuroblasts of the anterior cornu of the neural tube', which had disturbed many in the United States and England, received acceptance of publication in England in

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46 Dart with Craig, *Adventures with the Missing Link*, pp. 28-29; Tobias, *Dart, Taung and the 'Missing Link'*, p.7.

47 Robert Huettner to Kay Smithford 5 Aug. 1994, quoting extract from *The Marine Biological Laboratory: Twenty-fourth Report for the year 1921*; reprinted from the *Biological Bulletin*, vol. XL11, no. 6, June 1922.

48 The Commonwealth of Massachusetts, Copy of Marriage Certificate, No. 27, Falmouth, 3 Sept. 1921, and which clearly states Dora was Kentucky born, not Virginian born.

49 Dart, 'Recollections of a Reluctant Anthropologist', p. 420.

50 Dart letter to Ann Macintosh 6 Feb. 1979.

January 1922.<sup>51</sup> Nearly thirty years would pass before Shellshear and Dart would meet again, this time at their old *alma mater*, the University of Sydney.<sup>52</sup> Now in retirement, Shellshear had left Hong Kong concerned over the Japanese war-mongering in the Far East, leaving the Chair of Anatomy there after serving in it from 1923 to 1936. On return to Sydney he first held an honorary post in the Medical School, then in 1937 was appointed the first full time Resident Professor, serving in that capacity until 1948. The Shellshear Museum commemorating his work after his death in 1959, would be founded by his colleague Professor N. W. G. Macintosh holding the Chair of Anatomy. Several decades later Dart would make much use of his years of neurological research when engaged with the Institutes for the Achievement of Human Potential in America, and discussed later.<sup>53</sup> In regard to their joint earlier work, Shellshear's deathbed wish to Macintosh was, 'tell Dart we were right'.<sup>54</sup>

Back at University College, London in October 1921, Dart found many changes in staff, buildings and equipment. Woollard had gone to America on a Rockefeller scholarship while H. A. Harris had been appointed lecturer in Gross Anatomy. Dart's earlier support of Woollard was not misplaced. After America he would soon hold the Chair of Anatomy at the University of Adelaide in Australia and later in England the Chair of Anatomy at St Bartholomew's Hospital.<sup>55</sup>

Appointment as Senior Demonstrator and Curator of Anatomy for Dart for the 1921-22 session had been confirmed.<sup>56</sup> He was all set! Dart continued in this capacity to the end of the session, and for the session of

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51 R. A. Dart with J. L. Shellshear, *J. Anat.* vol. 56, Jan. 1922, pp. 77-95.

52 A. P. Elkin, 'Obituary' of Prof. N. W. G. Macintosh, *The Gazette*, May 1978, pp 21-22; Dart, 'Recollections of a Reluctant Anthropologist', *J.Hu. Evol.*, p. 420.

53 Alexander Murray Papers, Urbana, USA, copies held by F. Wheelhouse.

54 Ann Macintosh, Shellshear Museum, Sydney, interview by F. Wheelhouse 20 Jan. 1995.

55 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol. 8. no. 3, June 1972, p. 173; A. A. Abbie, 'Annual Post-Graduate Oration : Sir Grafton Elliot Smith', reprinted from the *Bulletin of the Post-Graduate Committee in Medicine*, University of Sydney, vol. 15, no. 3, June 1959, pp 101-150; Dart, 'The Evolution of Man' in *Grafton Elliot Smith : the Man and His Work*, eds. A.P. Elkin & N.W.G. Macintosh, 1974, p. 32.

56 University College, London, Committee Meeting, Minute 249G, 7 June 1921.

1922-23 had been designated Senior Demonstrator in Anatomy and Lecturer in Histology.<sup>57</sup> A significant upgrading in this area, he came under the wing of Professor J. P. Hill, FRS (Fellow of the Royal Society). Hill had been active in earlier years at the University of Sydney, and now held the Chair of Embryology and Histology, which it was said, had been expressly founded for him in the Department of Anatomy by Elliot Smith.<sup>58</sup> It will be recalled they were part of the Duckmaloi fraternity with Professor Wilson in Sydney years earlier.<sup>59</sup>

Still other scientific figures of world stature were enlisted by Elliot Smith. A surprised Dart found that he had gained as his laboratory assistant the distinguished Russian, Nicolas Kultchitsky. Dart mentions how he 'raced to the laboratory 'to meet this scientist, so famous for his microscopic investigations of the nervous system.<sup>60</sup> Upon querying his chief on the scientist's classification, Dart was advised that this one-time Minister of Education in Russia, who had escaped execution during the Revolution, possessed no English, a fact placing limitations on his appointment.<sup>61</sup> Never short of ideas, Dart found a means of conversing with him, using French, German and Latin terms.<sup>62</sup>

Past associates from the University of Sydney kept turning up in London and bringing influence to bear upon Dart's life, enriching it, and, on one occasion, even transforming it.

On the death of Professor Anderson Stuart in 1920, Professor J. T. Wilson briefly became Dean of the Medical School at the University of Sydney—however, in August of that year he left Australia to take up the Chair of Anatomy at Cambridge University.<sup>63</sup> Soon Wilson would sit on a panel adjudging Dart's academic capacity in a domain foreign to them both.

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57 *ibid*, Minute 242J, 4 July 1922.

58 Blunt and Morison, *Australian Anatomists in the 1920's*, p10.

59 David Branagan and Graham Holland, eds. *Ever Reaping Something New : A Science Centenary*, University of Sydney Press, p. 150.

60 Dart with Craig, *Adventures with the Missing Link*, p. 29; Diana Dart Graham letter to Kay Smithford 30 May 1995.

61 Dart with Craig, p. 29.

62 Diana Dart Graham, interview by Kay Smithford, 22-24 Jan. 1994; Dart with Criag, p. 29.

63 Ann Jervie Sefton, Nicholas Cheng and Ian G. Thong, eds. *The Centenary Book of the University of Sydney Medical Society*, Hale and Iremonger, Sydney, 1992, p. 24; Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 172; Blunt and Morison, p. 6.

Meanwhile, Wilson had been succeeded in Sydney by the brilliant, egregious and youthful John Irvine Hunter, a character of powerful charisma. Hunter had graduated in 1920 with First Class Honours and the University Medal, and was at once appointed a Demonstrator by Wilson. Within four months he had advanced to Associate Professor of Anatomy and, upon Wilson's departure for England, Hunter had been appointed in his stead. But first, he declared, he must undertake eighteen months' leave to attend anatomical centres in New Zealand, the United States and Europe and work with Elliot Smith in London.<sup>64</sup> During his sabbatical, Dart enjoyed the opportunity to savour Hunter's ebullient company.(fig. 37). The association proved a happy replacement for the loss of Shellshear's intellectual companionship. Dart recalled how young Hunter wrote 'with stream-like facility'.<sup>65</sup> How their shared visits to the Royal College of Surgeons Museum greatly expanded his own knowledge in the study of its splendid comparative brain series.<sup>66</sup> How they shared Kulchitsky's important study of muscle nerve endings, both producing papers on the subject. Hunter, Dart observed, was permitted to take some of Kulchitsky's histological preparations, when he returned to Sydney, where they were to prove invaluable in his collaborated work on muscle research with Norman Royle, and led importantly, then, towards the treatment of spastic paralysis, though later superseded by other workers.<sup>67</sup> Together with Elliot Smith, Hunter was to report on early human foetuses as well as aiding Elliot Smith in a new construction of the Piltdown skull.<sup>68</sup> Joint publications followed on the skull in 1922 and in 1924-25 on its unusual morphological features.<sup>69</sup> A cast of Hunter's version of the Piltdown skull is now held in the Shellshear Museum at the University of Sydney. Dart enjoyed a sense of being, if not a participant in all of this, a close observer. Perhaps just as well Dart could not foresee that the Piltdown skull's several interpretations then, and in earlier years, would impose serious constraints upon some of his own future

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64 Tobias, 'The John Irvine Hunter Memorial Lecture for 1992', University of Sydney, p. 8; Blunt and Morison, p. 17.

65 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 172.

66 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 173; Dart with Craig, p. 29; Dart, 'Inaugural John Irvine Hunter Lecture', University of Sydney, unpubl. 31 Jan, 1950, p. 4.

67 Blunt and Morison, *Australian Anatomy in the 1920's*, 1983, p.19; Tobias, 'The John Irvine Hunter Memorial Lecture for 1992', p. 9.

68 Dart, 'Recollections of a Reluctant Anthropologist', p. 420.

69 Tobias, 'The John Irvine Hunter Memorial Lecture for 1992', p. 8.



work, not only refuting it but almost destroying it!<sup>70</sup> A travesty of scientific interest because, ultimately, the Piltdown skull would be proven an untenable form.

Meanwhile, Dart made gratifying progress. His third paper, 'The misuse of the term "visceral" ', was published in April 1922.<sup>71</sup> In February, and aged only twenty-five years old, John Irvine Hunter returned to Sydney to fill the Challis Chair of Anatomy.<sup>72</sup>

In the summer of that year and with a great sense of excitement, Dart examined the latest fossil sent to London from Africa. It came from the zinc and lead mine at Broken Hill in Northern Rhodesia (now Kabwe, Zambia). Named *Homo rhodesiensis* (now *Homo sapiens rhodesiensis*), this previously inconceivable human skull astounded Elliot Smith, Sir Arthur Keith and J. T. Wilson. Dart was present at the meeting of the Anatomical Society when Sir Arthur Smith Woodward exhibited the Rhodesian Man before an excited public, and Dart found himself amazed at its 'flattened forehead behind ultra-Neanderthal eyebrow ridges and a gorilloid muzzle'.<sup>73</sup>

Importantly, Dart became involved in extensive studies of the brain form of every available type - particularly of fossils of man and apes, and aided in making replicas of such.<sup>74</sup> He was also undertaking vital research on the double innervation of the striated muscle of the python, aided by Kulchitsky.<sup>75</sup> In fact so keen was he on his range of work he would often return in the evening to continue it. One night not to be forgotten was the night he had misplaced his keys—he broke into the laboratory and had to answer to the police.<sup>76</sup>

With his range of work in neurology, embryology, histology, anatomical and historical problems, and, at the same time, delving into anthropology, Dart was most satisfyingly busy.<sup>77</sup> During the long summer

70 Jonathan Stone in Tobias's 'The John Irvine Hunter Memorial Lecture for 1992', Preface, p. 5; Dart with Craig, 35-43; Dart, 'Recollections of a Reluctant Anthropologist', p. 422.

71 Dart, *J. Anat.*, vol 56, April, 1922, pp. 177-88.

72 Tobias, 'The John Irvine Hunter Memorial Lecture for 1992', p. 8.

73 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol. 8, no. 3, June 1972, p. 174.

74 *The Illustrated London News*, 14 Feb. 1925, p. 200.

75 R. A. Dart letter to P. Morison, 29 Aug. 1983.

76 Tobias, *Dart, Taung and the 'Missing Link'*, p. 9.

77 Dart, 'Recollections of a Reluctant Anthropologist', p. 420

vacation in 1922, he enjoyed respite from such research by acting as a locum tenens in Llanelli, Wales. He stood in for an absent partner in an industrial workers' medical practice functioning under the Public Health Scheme of Great Britain. Two benefits ensued: he would keep in touch with general practice in medicine, and also be provided with a supplementary income for Dora and himself. Though the hours were long, Dart enjoyed this work and the novel experience of visiting patients on a noisy motorbike. Always a stickler for fair play, Dart found his partner wanting in this respect: he failed to turn up to relieve him on duty on Sunday, his one day off! When the partner began to argue, Dart walked out. He then travelled to London's East End and obtained a more compatible locum position.<sup>78</sup> The extra money earned helped defray a fortnight's hiking holiday on the Continent with his beloved Dora.<sup>79</sup>

The holiday over, Dart returned to London with all his characteristic eagerness to pursue his regular work, enjoy the ultimate satisfaction in an excellent reference library and up-to-date laboratory facilities. He contemplated no change in these conditions, estimating only that if he worked hard enough he might later gain a fellowship in a reputable English university. Then, and suddenly, came a shock announcement from Elliot Smith. He would referee Dart for the vacant Chair of Anatomy at the University of the Witwatersrand in Johannesburg, South Africa. A sense of outrage swept over Dart. He saw his future shattered. 'In this academic research life of London, I had reached the zenith of all my Australian dreams'.<sup>80</sup>

Without hesitation Dart instantly turned down the offer. His startled chief advised him not to be too hasty, to think matters over, to consult Wilson in Cambridge. He should discuss the matter with Sir Arthur Keith, with D. M. S. Watson, and others too. Before Dart's agitation, Elliot Smith attempted the psychological approach, pointing out patiently there were few British anatomists of Dart's background available. He was needed. After all Dart had studied in a pioneering university, and now here was another infant medical school to challenge him. Remember, Wilson had gone to a pioneering university, Sydney. He, himself had gone to Cairo University. Dart began to remonstrate over the forlorn lack of facilities in South Africa.

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78 Dart, interview by F. Wheelhouse, 11 Feb. 1973.

79 Dart, 'Recollections of a Reluctant Anthropologist', p. 420.

80 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 173.

Stung now, by Dart's attitude, Elliot Smith jibed him with the fact that his papers could just as well 'be written in the veld'. Finally, out of respect for Elliot Smith, Dart agreed to consult the senior scientists suggested. To his dismay he found them all to be in favour of his applying for the Johannesburg post. Not to do so, they prevailed, 'would be tantamount to a dereliction of duty'.<sup>81</sup>

In his dilemma, Dart attempted to resist his adversaries' urgings. Perhaps he could still defeat them, and he seized upon an opportunity, when against his will, he took up pen and filled in the application form. To the question of religion, he boldly entered, 'Freethinker'. Sir Arthur Keith bristled, and questioned Dart as to the wisdom of this. Didn't he know that a strong Calvinistic attitude prevailed amongst the Dutch in South Africa? Better to write 'Protestant', as, in any case, no one was likely to question what he was protesting about. Not even for Sir Arthur Keith, and probably because he had now reached this point of view, would Dart alter this entry.<sup>82</sup>

The moment arrived to appear before the interviewing committee. As he stood waiting to present himself, the other applicant, Dr Claude Witherington Stump, emerged from the committee room, congratulated him, and passed outside.(fig. 38). Dart's heart sank as he faced the panel unknown to him until then—Elliot Smith, Arthur Keith and James Wilson. All three men spoke in glowing terms of the opportunities awaiting him in South Africa.<sup>83</sup> Cajoled, beaten though he now recognised himself to be, Dart bolstered the inner man. 'I was highly indignant. Just think of it, against my will and all, I went, but in the back of my mind I thought I could pull out after some time and return to London'.<sup>84</sup> Meanwhile Claude Stump in 1923 was offered the Chair of Anatomy in Bangkok and arrived there in August 1924. By 1926 he had left and taken up a post which led to a Chair in the Medical School at the University of Sydney. It was here Dart was to meet Stump

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81 Dart, 'Recollections of a Reluctant Anthropologist', p. 421; Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 173.

82 Dart with Craig, *Adventures with the Missing Link*, p. 30.

83 Dart, 'Recollections of a Reluctant Anthropologist', p. 421; Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 173.

84 *The Star*, Johannesburg, 9 Feb. 1966, pp. 10-11.

again in 1950, as he did also Shellshear.<sup>85</sup>

In London, Raymond Dart was known to have irritated some of his superiors in several ways—one in particular, Sir Arthur Keith, who later wrote:

I was one of those who recommended him for the post, but I did so, I am now free to confess, with a certain degree of trepidation. Of his knowledge, his power of intellect and of imagination there could be no question; what rather frightened me was his flightiness, his scorn for accepted opinion, the unorthodoxy of his outlook.<sup>86</sup>

Furthermore, Dart drew his peers' concern over some strange ideas he had developed for his paper on the evolutionary structure of the brain and nerves of the whale, and later published in 1923. In hindsight of his activities Dart was to realise and admit, 'Such a person, I can see now in retrospect, was not only controversial, but upsetting and potentially dangerous'.<sup>87</sup>

While still in London, Dart was gaining valuable insight into previous human life on earth from the scientific papers and casts of bones and skulls on hand, one skull from the continent towards which he was seemingly headed. An enigma to his peers was the cast of the Boskop Man, the original unearthed in South Africa in 1914, its brain capacity measuring 1832 cc's, the largest yet found. Piltdown Man, discovered a year or so earlier and announced in 1912, and estimated to be the oldest human fossil yet found, had been adjudged by Sir Arthur Keith to have a brain capacity of 1500 cc. This opposed Sir Arthur Smith Woodward's initial estimation of it as 1070 cc.<sup>88</sup> Because of interest in the Piltdown skull, Boskop's significance became somewhat diminished in London's scientific circles. Nevertheless Elliot Smith had produced an interesting paper devoted to it in 1918, his conclusions now carefully studied by Dart, who valued the copy of it Elliot Smith had given him.<sup>89</sup> Later Dart came to realise that in 1917 Dr Sidney H. Haughton had described the Boskop skullcap in a paper which he

85 Ann Macintosh, Shellshear Museum Archives, University of Sydney, 9 April, 1996; Dart, 'Inaugural Hunter Oration', Sydney, 31 Jan 1950, unpubl.; Dart, 'Recollections of a Reluctant Anthropologist', p. 421.

86 Arthur Keith, *An Autobiography*, Watts, London, 1950, p. 480.

87 Dart, 'Recollections of a Reluctant Anthropologist', pp. 421-22.

88 Dart with Craig, pp. 20-21; Earnest Hooten, *Up From The Ape*, revised edn. MacMillan, N.Y. 1946, pp. 306-316.

89 Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S.Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 292.

read to the Royal Society of South Africa.<sup>90</sup>

The submission of Dart's nomination by his superiors for the position of Professor of Anatomy at the University of the Witwatersrand did not prove straightforward. Professor Bruce K. Murray unexpectedly admitted, 'It was almost entirely fortuitous that Dart came to Wits'.<sup>91</sup> When his candidature arrived at the University of the Witwatersrand, it was added to that of a Dr Thomson. In fact the Senate had actually selected Dr Thomson, though before he could be appointed he withdrew his application. When on 9 October 1922 the Senate resolved to readvertise the position, Council stood firm that an appointment be proceeded with immediately, and upon which instructions the Senate was obliged to make a recommendation on the current applications. Thus, the only other applicant, Dart, was appointed to the Chair of Anatomy at Wits.<sup>92</sup>

Whether Dart and his promoters knew of the turbulent events causing his predecessor, Professor E. P. Stibbe, to vacate the Chair of Anatomy in July, and thus set Dart upon his unexpected course, is not known. Later, Dart would become acquainted with the facts of Stibbe's shabby treatment. Meanwhile, and still in London, Dart was shown a letter from Professor Jan Hofmeyr, the Principal of the University of the Witwatersrand. In this Dart read that Hofmeyr's 'only expression was one of regret that the appointee was an Australian!' This indicated to Dart a lingering prejudice held against Australians from the Boer War days when they fought, together with the British, against the South African Dutch at the turn of the century.<sup>93</sup> What next, Dart must have thought, in that distant, alien land?

The die now cast, Raymond and Dora sailed for South Africa in late December 1922.<sup>94</sup> Dart no doubt struggling to rise above his reservations over what he firmly believed to be a wrong turn in his career, and Dora, no doubt, her usual animated self, struggling to cheer him up.

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90 Dart with Craig, *Adventures with the Missing Link*, p. 21.

91 Bruce Murray, *Wits The Early Years: A History of the University of the Witwatersrand Johannesburg And Its Precursors 1896-1939*, Witwatersrand University Press, 1982, p. 179

92 *ibid.*, p. 179.

93 Dart with Craig, *Adventures with the Missing Link*, p. 32.

94 *ibid.*, p. 25.

## CHAPTER 4

### PRELUDE IN SOUTH AFRICA : DART'S CHILD

I had sailed...feeling more like an exile than a man elevated to a professorship. I hated the idea of uprooting myself from what was then the world's center of medicine and leaving my research and studies with the giants of the profession to take over the Anatomy Department at Johannesburg's new and ill-equipped University of the Witwatersrand. I felt I had lived a pioneer's life for quite long enough in my younger days.<sup>1</sup>

With such sentiments did Professor Dart sail towards Cape Town aboard the S. S. *Umsumbi*, a cargo vessel with accommodation for four passengers, and now filled by Dr Allison, a surgeon; a South African nurse; Dora and himself. All four soon shared their medical training when, one day in a fracas, a Lascar seaman went berserk with a knife!<sup>2</sup> Midst convivial conversation later, the nurse's account of an unusual story about a diamond digger in South Africa who had unearthed a strange skull and hastily reburied it in superstitious fear, intrigued Dart, stirring his ever lively interest. Once landed in South Africa, he tried to locate this duo of diamond digger and skull, but without success. Nevertheless, the skull's description of being too small for a human being, yet too large for a baboon, remained registered in Dart's mind.<sup>3</sup>

For the second time in his life Dart found himself on South African soil, the first occasion being when en route to the Great War in 1918. Now it was January 1923, (fig. 39), and upon arrival in Johannesburg with his young American wife, the first sight depressed him. To this couple Johannesburg appeared a jerry-built mining town which they considered must have little changed since the gold rush days of the Nineties.<sup>4</sup> In reality it had grown remarkably since gold was discovered in 1886, when farms from Driefontein in the east to Roodepoort in the west were proclaimed as public diggings. From a handful of people then, by 1902 the population had reached 100 000, the settlement standing on the southern slopes of the Witwatersrand (ridge of white waters), a rocky watershed on an east-west

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1 Dart with Craig, *Adventures with the Missing Link*, p. 25.

2 R. A. Dart interview by F. Wheelhouse 1 Feb. 1973.

3 Dart with Craig, p. 30.

4 *ibid.*, 30

ridge, surrounded by the Transvaal high veld.<sup>5</sup> In 1923 it was difficult for the Darts to conceive that mining shafts on the city's boundaries had penetrated, some three kilometres below the city itself which crested on the Transvaal high plateau, 1730 metres above sea level, some 1537 kilometres by rail from where they had journeyed in the south from Cape Town.<sup>6</sup>

The University, the couple now learned, had progressed through decades of adolescence associated with various mining companies and name changes until finally achieving adult status by the University of the Witwatersrand Johannesburg Private Act, No. 15, 1921, effective from March 1922, and not yet ten months matured. A site later known as Hospital Hill was selected for the Medical School, but when Dart arrived only the south and west wings existed. The building, two-storied and L-shaped, was screened by a ten foot brick wall which in President Kruger's war-torn days had formed a garrison below a fort.<sup>7</sup>

Dart's worst fears in respect to the infant Anatomy Department in this 'utterly unknown'<sup>8</sup> and remote university, now became realised. As he and Dora made their first dreary survey, the gaping emptiness of the Anatomy Department and its rows of empty shelves yawned their poverty. Their footsteps echoed dismally in the dissecting hall, in its three rooms and lecture theatre, scant equipment obvious on all sides.<sup>9</sup> In the student laboratories they noted that there were no water taps and no electric plugs, no gas and no compressed air. To his great consternation, the new professor next discovered that the Medical School did not possess a library.<sup>10</sup>

A worse shock awaited Dart in the dissecting hall. It stood above the underground mortuary where his sole future staff member, a preparator, performed his grizzly work. The walls of the high-roofed dissecting hall were bespattered with dirt and various marks imprinted by tennis and footballs

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5 C. Carlyle-Gall, (ed.), *Six Thousand Miles of Sunshine Travel over the South African Railways*, S. A. Railways & Harbours, 1937, pp. 16, 36.

6 *ibid.*, pp. 16, 36.

7 Dart with Craig, p. 31; Bruce K. Murray, *Wits the Early Years: A History of the University of the Witwatersrand and its Precursors 1896-1929*, Witwatersrand University Press, 1982, pp. 109-111.

8 Dart, 'Recollections of a Reluctant Anthropologist', *J. Hum. Evol.*, vol. 2, 1973, p.421.

9 F. Wheelhouse, unpublished manuscript, R. A. Dart, p. 17.

10 Dart with Craig, p. 31; Diana Dart Graham interview by Kay Smithford, Spartanburg, SC. USA, 21-24 Jan. 1994; Cine Nova Productions, Toronto, Canada, 'Skull Wars', video, Jan. 1996.

where energetic students practised their sports. Abhorrent were the zinc-covered trestle-type dissecting tables, holding the shrunken portions of cadavers covered only with scant hessian-type material. This situation so alarmed Dora that when recovered from a good cry, 'a woman's prerogative I rather envied at that moment',<sup>11</sup> as Dart later admitted, she set off to Johannesburg shops in search of suitable material to remedy the problem. After installing her sewing machine in an adjoining room, she set to work, cutting and stitching together wraps for each corpse, a separate white cloth covering for the head, the limbs, and the trunk. Finally, Dora enshrouded each cadaver with rubberised waterproof sheeting.<sup>12</sup>

Though close to despair, Dart was not one to bemoan his fate. He and Dora worked hard to establish order before the next term began. The Administration granted a fresh coat of paint for the walls, but it refused native labour to clear the weed-grown entrance to the Medical School. Whereupon, Dart rolled up his sleeves, and with the aid of some willing students, attacked the growth with mattocks and shovels. The act failed to be appreciated by the class-conscious administrators who rebuked Dart. What were the Bantu for?<sup>13</sup>

The new Professor of Anatomy received no words of welcome from the students and colleagues of his popular predecessor, Professor E. P. Stibbe. Dart would soon learn of the long drawn-out conflict between the Senate, Council and Stibbe before the latter was forced to resign following his affair with the chief college typist, and subsequent divorce - an act so frowned upon in those days.<sup>14</sup> Later, the unhappy account of this incident would be published in books by Professor Bruce Murray and the well-known South African author, Alan Paton.<sup>15</sup>

Another problem confronting Professor Dart and active even before his arrival, was the antagonism of the medical fraternity to additional doctors being trained. They feared oversupply and some considered the Witwatersrand Medical School superfluous. Dart dismissed these fears as groundless and deliberately canvassed for students. He became foremost

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12 Dart with Craig, *Adventures with the Missing Link*, p. 31.

13 R. A. Dart interview by F. Wheelhouse 1 Feb. 1973.

14 Dart with Craig, p. 32, Bruce Murray, *Wits The Early Years*, pp.76-91, 380.

15 Bruce Murray, *Wits The Early Years*, pp. 78-87; Alan Paton, *Hofmeyr*, as indicated by Murray.



among those who publicised the Wits Medical School. Enrolments increased from 95 in 1922 to 241 in 1929. It had only taken Dart three years to convince the opposition that medical unemployment was not a problem. A most important factor which enticed young hopeful medicos was the international fame Dart brought to the Medical School within eighteen months of his appointment. However on his arrival in 1923 in addition to all the initial problems which beset him and because of the Stibbe scandal, Dart also found preparation of the curriculum had not been undertaken.<sup>16</sup>

Recognising the need for change Dart seized the opportunity to bring it about. He sought at all costs to prevent the Medical School remaining nothing more than a 'Cinderella' of the University. With his rich resources of intellectual energy, he tackled matters. In March 1923, barely a month after term's commencement, he initiated a meeting to discuss the establishment of a library for the Medical School. Members of the South African Institute for Medical Research, editors of the *Medical Journal*, and members of the Medical School were invited to attend. Scattered medical texts existed in some of these areas, and by July 1926 they formed the nucleus of a joint library to be housed in the Medical School.<sup>17</sup> Dart became honorary librarian and induced the authorities to waive the university fees of two of his students who were chosen to act as his assistants. Eventually with support from the Carnegie Foundation he obtained a paid Librarian and staff.<sup>18</sup>

Never one to overlook an opportunity for tapping possible sources of help in building his specimen collection, Dart wrote to Dr Fourie in Cape Town in June 1923, and asked for any Bushman skeletons which might be available.<sup>19</sup> (fig. 40). On arrival, these initiates were destined to form the nucleus of an outstanding skeletal collection representative of mankind in South Africa and other countries of Africa, a collection that later and justifiably bore Dart's name, (fig. 41). He gleaned the idea for such a collection while studying under Professor R. J. Terry at Washington University in St Louis, Missouri, during his Rockefeller Fellowship two years earlier. Terry himself had been inspired by his former teacher, Turner of

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16 Bruce Murray, *Wits The Early Years*, pp 104, 174-75.

17 Dart, 'The Witwatersrand Medical Library', *Gazette of the University of the Witwatersrand, Johannesburg*, vol. 1, no. 11, 23 July 1956, p. 17; Murray, *Wits The Early Years* p. 184.

18 Dart, 'The Witwatersrand Medical Library', pp. 17-19.

19 Frances Wheelhouse, *Raymond Arthur Dart : A Pictorial Profile : Professor Dart's Discovery of 'The Missing Link'*, Transpareon Press, Sydney, 1983, p. 35.

Edinburgh, and his skeletal collection.<sup>20</sup>

Dart never hesitated to express his ideas, and to work for their introduction—despite ruffling a few feathers along the way. It was said, ‘He did not necessarily seek controversy, but he certainly provoked it, for many of his ideas challenged established norms, as when he insisted on the advantages of teaching general anatomy in a single year instead of over two’.<sup>21</sup> This idea he had outlined to his colleague and Professor of Anatomy at the University of Sydney, Professor A. N. Burkitt with whom, as a student he had served on the Medical Society. He wrote: ‘You will be interested to hear that I have adopted the American System of ‘Anatomy in One Year’. I don’t see why it can’t be done and it suits our conditions better. We will supplement it with a subsequent year in Clinical Anatomy in hospital’.<sup>22</sup>

Dart never failed to shoulder responsibility, and in his first year he acted as secretary of the Medical Faculty. The Senate soon encountered his strong and assertive personality, his firm demands for university funds, education for African doctors and medical aids; African township problems, and the introduction of a host of new courses. His role in black medical education is discussed shortly. Students, colleagues and adversaries soon came to recognise Dart as a man who would eventually be lauded as one of ‘the truly great and colourful characters in the history of Wits’.<sup>23</sup> Students and staff would also bear witness to his brilliant and innovative histrionics, even tremble, on occasion before his explosive nature. They would come to appreciate his vigour and verve, the quickness of his movements which conveyed his enthusiasm.<sup>24</sup> His nature, Wits would come to learn, was all-encompassing and, decades later it would be aptly described by Professor Bruce Murray:

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- 20 Tobias, *Dart, Taung and the ‘Missing Link’*, pp. 6-7; Tobias, ‘The Life and Work of Professor Raymond Dart’, address in Great Hall, University of the Witwatersrand, Johannesburg, 22 June 1983, unpubl., pp. 15-16.
- 21 Murray, *Wits The Early Years*, p. 181.
- 22 Shellshar Museum Archives, Medical School University of Sydney, R. A. Dart letter to A. N. Burkitt, University of Sydney, 6 Apl. 1923.
- 23 Murray, *Wits The Early Years*, p. 181.
- 24 Interviews by F. Wheelhouse of Trevor-Jones, 2 Apl. 1973; P. V. Tobias, 13 Feb. 1973; Adrian Boshier, 20 Apl. 1973; Judy Roets and Brian Maguire, 23 Mar. 1973; James Kitching, 22 Mar. 1973; Laurie Geffen, 1 Apl. 1992; Laurie Geffen, ‘The Hidden Hand in the Evolution of the Human Brain - a Tribute to Raymond Dart 1893-1988’, public address, University of Queensland, 23 Oct. 1991, unpubl. pp-8-9; Bruce Murray, *Wits The Early Years*, p. 181.

A showman, as well as very emotional, in his time he put on some dazzling performances in Senate. As the occasion demanded, he could be angry and sarcastic, earnest and emotional, or gentle and persuasive. His lectures, notably his first lecture to second-year students, were very often showpieces, and he became enormously popular among the students. He was a great believer in visual demonstrations, and was quite prepared to swing from the hot-water pipes in the lecture hall to illustrate the brachiating of Congo gorillas, crawl like a crocodile to illustrate the movements of reptiles, and lift weights in front of his students to demonstrate human muscles. As a physical fitness fanatic, he happened to possess some useful muscles.<sup>25</sup>

His students most of all appreciated the way in which he stimulated their studies and displayed deep personal interest in their well being. With them Dart was 'generally warm, compassionate, understanding, and helpful, though sometimes also provocative and outspoken, and he devoted many long hours to assisting them in their problems'.<sup>26</sup> He became particularly well known for helping lame ducks along the way.<sup>27</sup> He had an uncanny ability to read people's characters and worth; his assessment of current and future situations was remarkable. Admirable indeed was his capacity to light a flame of passion in students, colleagues and others, helping them to excel in matters which they, themselves, had not perceived. Professor Alexander Galloway bore testimony to this in the dedication to Dart in *The Skeletal Remains of Bambandyanalo*. This book was based on his DSc. thesis identifying the early inhabitants of this northern Transvaal area near the Southern Rhodesian (now Zimbabwe) border and it praised: 'Raymond Dart for his capacity of seeing in people qualities of which they themselves are unaware, and encouraging those capabilities.'<sup>28</sup>

Early in his first teaching year at the University of the Witwatersrand, Dart's colleague in physiology asked him to take over the subject of histology. Dart was happy to do so despite the extra work involved. He explained, 'It enabled me to introduce an extra 3rd Year in the Dept of Anatomy awarding (for the first time) a B.Sc. in Science for those students wishing to take an extra year to study Anatomy or Physiology or both before

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25 Murray, *Wits The Early Years*, p. 181.

26 Murray, *Wits The Early Years*, p. 181; Tobias, *Dart, Taung and the 'Missing Link'*, pp. 55-8; interview of Tobias as above by F. Wheelhouse.

27 Tobias, p. 55.

28 Alexander Galloway, *The Skeletal Remains of Bambandyanalo*, (ed.) Phillip Tobias, Witwatersrand University Press, 1959, Dedication, 1959; Tobias, *Dart, Taung and the 'Missing Link'*, p. 11.

continuing to their 3d [*sic* 3rd] Year in Medicine'.<sup>29</sup> Dart wrote to a friend of his busy times on his arrival in South Africa and how it was 'somewhat of a change to have the burden of a department thrust upon one's shoulders'. Nevertheless, he reflected, 'the yoke is easy'.<sup>30</sup>

In addition to his academic duties Dart resolutely completed some of the papers he had commenced in England dealing with several fundamental aspects of neurology, the subject upon which his heart was set.<sup>31</sup> Among these was his lengthy contribution on the Brain of Zeuglodontidae (order Cetacea - whales, porpoises and dolphins) in which he discussed the law of infiltration underlying the architecture of the central nervous system with particular reference to the evolution and structure of the cerebellum in whales. This paper Dart felt sure—although he said he had no detailed evidence, 'that it must have been that paper in particular which earned me the Sydney M.D. in 1926 which is unlikely to have been awarded me without G. E. S.'s [Grafton Elliot Smith's] and Wilson's recommendations'.<sup>32</sup> It has been established this was so and that Wilson and Elliot Smith were his examiners. There is reason for Dart's confusion over the title of his submitted work, for when he wrote of this matter to Frances Wheelhouse in 1974 he was casting his mind back over the last seventy years. Further reason for Dart's uncertainty stems from the fact that he had previously submitted two earlier papers, and on Elliot Smith's advice withdrew these, replacing them with one on the Brain of Zeuglodontidae.<sup>33</sup> Some comments on the paper for which he was granted his MD on 7 April 1927 prove interesting. Professor A. N. Burkitt head of the Anatomy Department to the Dean of the Faculty of Medicine, University of Sydney observed that 'both the thesis and the supporting papers are of sufficient merit and involve such wide and varied fields of research that he should certainly be exempted from a clinical examination'.<sup>34</sup> In a further letter Burkitt believed Dart's interpretations to be correct, pointing out although some points were of 'brilliant speculation' there was in other cases 'insufficient evidence in support of brilliant hypotheses'. Nevertheless he concluded, 'Professor

29 R. A. Dart letter to Patricia Morison, 29 Aug. 1983.

30 Shellshear Museum Archives, Medical School, University of Sydney, R. A. Dart letter to A. N. Burkitt, 6 Apl. 1923.

31 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol. 8, no. 3, June 1972, p173.

32 R. A. Dart, letter to F. Wheelhouse 3 Feb. 1974.

33 Shellshear Museum Archives, Medical School, University of Sydney, Raymond A. Dart letter to The Registrar, University of Sydney, 20 May 1926.

34 *ibid*, A. N. Burkitt letter to Dean, Faculty of Medicine , 7 Apl .1927.

Dart's work stands at a high level and is certainly deserving of an M. D. Degree'.<sup>35</sup> Professor Burkitt was referring also to the additional ten papers Dart submitted in support of his work as well as numerous other papers Dart had already produced.<sup>36</sup> It is interesting to note that although Dart made formal application to Professor A. E. Mills, Dean of the Faculty of Medicine at the University of Sydney on 10 June 1924 to be admitted as a candidate for his MD and received the application form in December 1924, it took him eighteen months to return his application with the fee of twenty pounds. It would seem Dart gave priority to Medical School matters over his own personal interests.<sup>37</sup>

By the end of 1923 Dart's neurological interests were being swamped by those of African osteology. Earlier Mr F. FitzSimons of the Port Elizabeth Museum had sent him some Boskop Man-type bones from the Zitzikama Cave in the Cape Province unearthed some 4.5-5.5 metres below its surface. No time was lost by Dart in the preparation of his first paper on these prehistoric ochre-stained Boskop remains and which gained publication in the October 1923 issue of *Nature*. Prophetic were his remarks that the raging controversy over the Piltdown remains and the War 'conspired to distract the attention of the scientific world from the significant discovery which was made in South Africa in 1913 [*sic.* 1914] of the Boskop Man in the Transvaal. Prophetic as well were his comments on the Rhodesian skull unearthed in Africa in 1921, which he said 'has served to redirect attention to the part which Africa still has to play in elucidating the wider questions of human origins and human migrations. He could definitely state that the Boskop race preceded the Strandlooper race historically and while their implements, culture and aesthetic achievements remained to be discovered, 'their employment of ochre in their burial rites indicates their familiarity with pigments and the artistic and symbolical uses to which they might be put'.<sup>38</sup> Within a few years Dart and others would reveal more of their secrets; of 'a race once widely distributed in South Africa from the Transvaal to the remotest south-eastern corner of the continent'.<sup>39</sup> In this paper can be seen Dart's zeal registered in his promotion of his new

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35 *ibid.*, A. N. Burkitt letter to Dean also 7 Apl. 1927.

36 *ibid.*, Registrar, University of Sydney letter to A. N. Burkitt, 18 Oct. 1926.

37 *ibid.*, R. A. Dart to Registrar, University of Sydney, 20 May 1926.

38 Dart, 'Boskop Remains from the South-east African Coast', *Nature*, vol 112, no. 2817, 27 Oct. 1923, pp. 623-25;

39 Dart, *Nature*, vol. 112, no. 2817, 27 Oct. 1923, pp. 623-25; Dart with Craig, p. 22; Tobias, *Dart, Taung and the 'Missing Link'*, p. 5.

country's important discoveries concerning human ancestry.

The vast volume of physiological and anthropological issues which screamed for initiation in this stupendous continent of Africa, now of necessity, took Dart away from his beloved neurological and embryological research, though notwithstanding, he now guided several of his students along these paths of research. He considered himself to be in a similar situation to that of Elliot Smith when in Cairo, who found 'bones had to be studied instead of brains'.<sup>40</sup> Although Dart published seven more scientific papers by mid-1924, his directional change can be seen in the fact that four were on medical and neurological subjects, while the other three papers covered aspects of physical anthropology.<sup>41</sup> Dart expressed disappointment at this forced change and the current conditions he was enduring in Johannesburg. He wrote:

But it would be useless to deny that I was unhappy in the first eighteen months. The abysmal lack of equipment and literature forced me to develop an interest in other subjects, particularly anthropology, for which Elliot Smith had fired my enthusiasm.<sup>42</sup>

However, Dart's foremost priority was to fill by whatever means possible all those empty shelves with specimens for the students' attention, to build an adequate if not a wholly satisfactory Anatomy Museum.<sup>43</sup>

Before the July vacation of 1924, Dart encouraged his students to collect fossils during the holidays, offering the added incentive from his own pocket, 'a prize of five pounds to the student who collected the most interesting finds on the veld during the holidays'.<sup>44</sup> They jumped at the opportunity. Inspired by the vitality of their professor's encouragement, they responded both in quantity and quality with their specimens.

From this initiative in fossil collecting, Dart would be destined within some four months from these July holidays to effect a profound revolution in the knowledge of our human ancestral precursors, and in so doing launch his own university from its African backwater to a place of world

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40 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol. 8, no. 3, June 1972, p. 173.

41 Ilse Fisher, 'The Published Works of Raymond Arthur Dart : A Bibliography Compiled by Ilse Fisher', University of the Witwatersrand, 1969, pp. 1, 9.

42 Dart with Craig, *Adventures with the Missing Link*, p. 32.

43 Murray, *Wits The Early Years*, p. 181; Dart with Craig, p. 1.

44 Dart with Craig, p. 1.

prominence.<sup>45</sup>

## Dart's Child

Which student would win Professor Dart's prize? In had come fossils and other specimens of natural scientific value, the winner of the July contest to be made by majority vote of students themselves. Honours went to a collection of 'a crocodile stuffed with straw, an ox and some interesting stones and bones from a cave'. The most disappointed student proved to be Josephine Salmons, Dart's only female BSc. student, his occasional demonstrator, and an avid collector. But failure in the contest did not discourage her from further searching.<sup>46</sup>

Early in the summer of 1924, Josephine Salmons (figs. 42, 43) surprised her professor with the excited announcement that she had what she believed to be a fossilized baboon skull. She had been handed it at the University by Mr. E. G. Izod's son.<sup>47</sup> In May of that year E.G. Izod as director of the Northern Lime Company he had visited the company's new holding of the former Nolan Lime Works at Taung in the northern Cape Province.<sup>48</sup> There he had obtained from the manager's office at nearby Buxton Limeworks, an unusual souvenir which he thought might make a handy paperweight. In his opinion it was a fossilized monkey skull. A sceptical Dart advised his young demonstrator that if indeed it were a baboon skull, it would be an extremely rare find. He mentioned the primate fossils from Fayūm in Egypt, advising that apart from Rhodesian Man and Boskop Man, he knew of no other primate fossils having been

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45 Murray, *Wits The Early Years*, p. 179.

46 Dart with Craig, *Adventures with the Missing Link*, pp. 1-2; R. A. Dart, 'Cultural Status of the South African Man-Apes', *Smithsonian Report for 1955*, pp. 317-338, Pub. No. 4240, Smithsonian Institution, Washington, 1956, p. 319; Tobias, *Dart, Taung and the 'Missing Link'*, p. 17.

47 Dart with Craig, pp. 1-2; R. A. Dart, 'Inaugural John Irvine Hunter Memorial Oration', unpubl., University of Sydney, 1950, pp. 6-7; Tobias, *Dart, Taung and the 'Missing Link'* p. 17; Dart, 'Cultural Status of the South African Man-Apes, *Smithsonian Report for 1955*, p 319.

48 Dart with Craig, pp. 2-4; Dart, '*Australopithecus africanus* : The Man-ape of South Africa', *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99; Tobias, pp. 17-18; Dart, 'Inaugural John Irvine Hunter Memorial Oration', Sydney, unpubl. 1950, p. 7; Dart, 'Cultural Status of the South African Man-Apes'. *Smithsonian Report for 1955*, p. 320; Dart, 'Robert Broom his life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p.12.

found south of the Sahara. Actually, as Dart was to learn, other baboon fossils had already been found at Taung, also in Tanganyika and, even more exciting, an ape fossil recovered on the shores of Lake Victoria Nyanza.<sup>49</sup>

Upon examination of Josephine Salmons' specimen, Dart to his surprise and excitement realised that it was unquestionably a baboon. He lost no time in carefully gathering the skull and sped down the incline, later known as Hospital Hill, in his Model T Ford to reveal it to his colleague, the veteran Scottish Professor of Geology at Wits, Robert Burns Young, who was also equally surprised. As luck would have it Young was leaving shortly for Thoming near Taung to survey farms in the vicinity for further lime deposits. He was agreeable to Dart's earnest request while there to obtain more fossil-bearing rocks from the site.<sup>50</sup>

Once at Buxton Limeworks about 10 kilometres to the north east of the railway station then known as Taungs (subsequently changed to Taung and meaning place of the lion - Tau or Tao) where Professor Young had alighted from the train during November, he discussed the matter of Dart's request with Mr A. F. Campbell, the general manager of the Northern Lime Company, who in courteous response, directed Young to his works manager, Mr A. E. Spiers.<sup>51</sup> Meanwhile M. de Bruyn, only recently, an observant quarryman and also an amateur collector of odd fossils, had brought to Spiers' office some interesting stone blocks. In one there was an unusual skull, which he thought was different from the baboon skulls he had seen and collected since 1919. Spiers had, like Izod, thought it an unusual paperweight and used it on his office table.<sup>52</sup> Advising Spiers of Dart's keenness to obtain sample rocks with bones in them, Spiers showed Young those recently brought in by de Bruyn. As well he took him to the actual site from where they were blasted out, which was in the vicinity of where Izod's

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49 Dart with Craig, *Adventures with the Missing Link*, pp. 2-4.

50 Dart with Craig, pp. 2-4; Tobias, *Dart, Taung and the 'Missing Link'*, p.17; Dart 'Inaugural John Irvine Hunter Memorial Oration, p. 7; Dart 'Cultural Status of the South African Man-Apes, *Smithsonian Report for 1955*, p. 320; Dart, '*Australopithecus africanus*: The Man-Ape of South Africa, *Nature*, vol. 115, no. 2284, 7 Feb. 1925., 195-99.

51 Dart with Craig, p. 4; Tobias, *Dart, Taung and the 'Missing Link'*, p. 23-29; Tobias, 'Life and Work of Professor Raymond Dart', address in Great Hall, University of the Witwatersrand, unpubl. 22 June 1983, pp. 37-46.

52 Dart with Craig, pp. 4-5; Tobias, *Dart, Taung and the 'Missing Link'*, pp. 25-34.



baboon specimen had been previously obtained.<sup>53</sup> Dart advised that Young was permitted 'to select further samples of fossil material for me from the same formation', including those in Spiers' office, among those the 'paperweight' and 'a second and larger cast, and some rock fragments disclosing portions of bone'.<sup>54</sup> The collection was large and filled two boxes which Young arranged to transport by rail to Dart's home in Melrose, Johannesburg. The astute Young sensed the greater importance of two blocks, the one on the manager's table and another of similar colour and texture. These two he picked out to take back with him on the train to hand personally to Dart.<sup>55</sup>

Unappreciated then was the canny way in which Young had selected these rock pieces. Unknown too was the fact that they would provide the most crucial and most inconceivable fossil form of the century. Variable accounts have been written over the years of what were thought to be the facts, dates, people and events associated with these unusual rocks. It would be the painstaking research forty years later carried out by Professor Phillip Tobias which would establish with more certainty an accurate historical account of the events surrounding these rocks.<sup>56</sup>

Delivery of the Taung load at the Dart residence on 28 November 1924 could not have happened at a more inopportune moment. Dora Dart was preparing to receive guests for the wedding of their dear and first friend in Africa, Dr Christiaan (Christo) Beyers and later a senior lecturer in applied anatomy and operative surgery at the University of the Witwatersrand. He was to marry a French widow, Mira Brown (*née* Rivet), whom he had met in London while studying at St Bartholomew's Hospital, and the nuptials were to be performed within the hour. Upstairs, meanwhile, Dart, the best man, reluctantly donned his formal morning suit brought from England and since then preserved in mothballs. He struggled also with his detested stiff-winged collar, and while doing so spotted the deliverymen of the South African Railways from his bedroom window. As they approached along the driveway with the crates, he hurried down to instruct the driver to place these in a side pergola. Beset with curiosity, Dart broke open the two

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53 Dart with Craig, pp. 4-5; Tobias, *Dart, Taung and the 'Missing Link'*, pp. 25-34.

54 Dart, '*Australopithecus africanus* : The Man-Ape of South Africa', *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99.

55 Dart with Craig, p. 4; Tobias, *Dart, Taung and the 'Missing Link'*, p. 23-29; Dart, *Nature*, vol. 115, no. 2284, 7 Feb. 1925, p. 195-99.

56 Tobias, *Dart, Taung and the 'Missing Link'*, pp. 1-49.

crates at once, only to be interrupted in his examination of their disappointing contents - fossilized eggshells, bird's eggs, and the odd piece of animal bone—by the appearance at his side of Professor Young bearing two Taung specimens of his own.<sup>57</sup>

A thrill of excitement shot through Dart as he at once recognized one of Young's rocks as an endocranial cast of the interior of a skull. From that moment Dart proved indifferent to Dora's pleading that he leave his rocks and be ready to receive their guests. He later confessed that he had no recollection of his wife's presence, so totally absorbed was he in the two specimens brought to him by Young.<sup>58</sup>

Together, it is reported, Dart and Young manipulated the first rock fragment, the endocranial cast, into the second piece of breccia, and were delighted to find they did so perfectly—they were companion pieces.<sup>59</sup>

While awaiting delivery of these specimens Dart had surmised that in addition to baboon skulls some other interesting fossils might well turn up.<sup>60</sup> He had knowledge of the Boskop skull found in South Africa in the Transvaal in 1914 and of the 1921 discovery of Rhodesian or Broken Hill Man (now Kabwe Man) of Northern Rhodesia, now Zambia. He had written a paper for *Nature* himself as recently as 1923 on the skulls found at Zitzikama Caves on the south east coast of Africa, and considered of Boskop type. He had also been more than curious of the Reverend Neville Jones's collected evidence in 1920 at Taung of hand axes of early form shaped there in the Harts Valley and obviously indicating ancient human habitation.<sup>61</sup> Inspecting the beautifully lime-crystallised brain cast fossil which he now held, Dart recalled:

But I knew at a glance that what lay in my hands was no ordinary anthropoidal brain. Here in lime-consolidated sand was the replica of a brain three times as large as that of a baboon and considerably bigger than that of any adult chimpanzee. The startling image of the convolutions and furrows of the brain and the blood vessels of the

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57 Dart with Craig, pp. 4-8; Tobias, *Dart, Taung and the 'Missing Link'*, pp. 16-34.

58 Dart with Craig, pp. 4-8.

59 Dart, '*Australopithecus africanus*: The Man-Ape of South Africa', *Nature*, vol. 115, no. 2284, 7 Feb. 1925 pp. 195-99.

60 Dart with Craig, p. 5.

61 Arthur Keith, *Antiquity of Man*, Williams and Norgate, London, 2nd. edn. vol. 1, 1925, p. 356.

skull was plainly visible.<sup>62</sup>

Only a tug on his sleeve and the agitated tone of the bridegroom reminded Dart that the bridal car was now due and who threatened to find another best man persuaded Dart to turn away from the pergola to resume his duties. Before doing this he took the two rocks upstairs to his bedroom and locked them with special caution in the wardrobe.<sup>63</sup>

Dart managed to contain himself throughout the ceremony, the reception and to departure time of the newly weds and guests. Then off came his hated stiff-winged collar, new attire substituted and out came the rocks from his wardrobe.

In his more extensive examination of the endocranial (brain) cast this young scientist was astounded to find the big forebrain had grown far backward and that it completely covered the hindbrain or cerebellum. In addition he registered a noticeable distance between its clearly marked furrows. He realised this brain was too small for a primitive man, but was impressed with the quality not quantity of his specimen's brain. He knew also that these furrows, or sulci, one moon-shaped or lunate, the other, parallel, were found in both apes and primitive man.<sup>64</sup> His knowledge of this area of the brain had been advanced by his previous chief, Professor Grafton Elliot Smith, the first man to locate the *lunate sulcus* in human brains.<sup>65</sup> Dart while in London had intensely studied numerous brain formations with Elliot Smith, particularly those of anthropoids and humans and was aware that in human brains these two furrows were greatly separated by expansion of cells between them, consequently the *lunate sulcus* was so distanced from the *parallel sulcus* that it disappeared from the outer part of the brain.<sup>66</sup> In Dart's mind a crucial point.

What immediately excited and surprised Dart was the distance between these furrows in the Taung's cast. He found this to be three times greater than in living apes. To Dart such a creature possessing this brain

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62 Dart with Craig, p. 5

63 *ibid.*, p. 7.

64 Dart, '*Australopithecus africanus: The Man-Ape of South Africa*', *Nature*, vol 115, no. 2284, 7 Feb. 1925, pp. 195-99; Dart with Craig, p. 6,12.

65 Dart with Craig, p. 6, Dart, *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99.; Dart 'The inaugural John Irvine Hunter Memorial Oration', Sydney, unpubl. 1950, pp. 10-11.

66 Dart with Craig, p. 6; Dart, *Nature*, vol. 115, no. 2284, , 7 Feb. 1925, pp. 195-99.

would seem to be three times more intelligent also.<sup>67</sup> At this stage and with the face yet unseen by him, this was an amazing deduction. His mind turned to Darwin's theory of Africa as the place of early human progenitors, and questioned, 'Was I to be the instrument by which his "missing link" was found?'<sup>68</sup> A most reasonable thought no doubt since his mentor Grafton Elliot Smith who had identified the *lunate sulcus* in humans, a fissure between two convolutions near the rear of the brain, also put forward the idea that this gap between the lunate and the parallel sulcus was an important pointer of evolutionary development.<sup>69</sup> Cradled in his hands he was certain was 'one of the most significant finds ever made in the history of anthropology'.<sup>70</sup>

What, Dart wondered, was this mysterious creature, one with a larger brain than a chimpanzee and nearly rivalling that of a gorilla, and which he noticed in some areas his specimen was superior to the latter's? He wondered what creature might be so greatly displaced from its northern tropical jungle relatives? Why was it living over two thousand miles to the south of them in a topographical setting of open terrain of grassland plains, treeless in the main, a topography thought to be unchanged since Cretaceous times which spanned from 144 to 66.4 million years ago? What, he thought might have been its possible diet in an area no longer plentiful of nuts and fruits as in that of a tropical habitat? He considered perhaps it foraged for its food in the manner of baboons, gathering birds' eggs, berries, grubs and insects.<sup>71</sup>

Still examining the Taung brain endocast, Dart turned his attention to the orifice at the base of the skull, the *foramen magnum*. What impressed him was its relative forward displacement. By sheer brilliance by comparison of the 'head balancing indices' of baboons, chimpanzees, Rhodesian man and various European skulls for their poise on the vertebral column, he assessed his Taung specimen to be nearly

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67 Dart, '*Australopithecus africanus* : The Man-Ape of South Africa', *Nature*, vol. 115, no. 2284, 7 Feb. 1925, p. 195-99.

68 Dart with Craig, *Adventures with the Missing Link*, p. 6.

69 John Reader, *Missing Links : The Hunt For Earliest Man*, Little, Brown & Co., Boston, 1981, First American edn. p. 87.

70 Dart with Craig, p. 6.

71 Dart, *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99.; Dart, 'The Inaugural John Irvine Hunter Memorial Oration'. Sydney 1950, unpubl. pp. 8-9.; Dart, 'Cultural Status of the South African Man-Apes', *Smithsonian Report for 1955*, p. 320; Dart with Craig, p. 7.

erect and bipedal in gait. In other words it walked as do humans, plantigrade on the soles of their feet, as opposed to arboreal apes, which, on the ground, were knuckle walkers. Such a creature he assessed, would have its hands free for various uses, food gathering for example, or for fending off enemies. Moreover, with its upright poise it could be fleet of foot to evade them.<sup>72</sup> In later years Dart would write many papers on the subject of poise and skill in humanity. However, his foregoing deductions made thus far on the brain cast proved extraordinary upon Dart's part because a face had yet to be uncovered.

Having assessed the endocranial cast, Dart set about work on its companion piece of breccia in which matrix he could partially see the left side of the mandible. Surely there would be a face in this piece of rock. If so, he must take the greatest care in his efforts to release it from its entombment in this encrusting hard rock. Of tools to do so he had few, and they were crude. At the local hardware shop he had purchased a hammer and some chisels; from his wife he had borrowed a knitting needle and sharpened it. He also had a pair of calipers—hardly an array of scientific instruments. Carefully he prepared a bed of sand and also filled two tobacco bags with sand to place the specimen on as a buffer against the taps of his hammer upon his chisels. He searched ill-stocked Johannesburg book shops for suitable texts for consultation. He had brought a meagre few of his own from London and these proved vital aids to him.<sup>73</sup> These included Duckworth's *Anthropology and Morphology*, second edition, vol. 1; Owen's *Anatomy of Vertebrates*, vol. 111; Tomes's, *Dental Anatomy*, seventh edition, also Topinard's *Anthropology*.<sup>74</sup>

With such meagre aids and working in his spare time after his academic duties, Dart achieved what was nothing short of a miracle. Nervously and delicately he chipped away with his hammer and chisels and deftly probed with Dora's sharpened knitting needle, manipulating it into vital areas, particularly around the area of the eye sockets. In front of the skull he found no heavy eyebrow ridges as in living apes. Working on the upper and lower jaws (not yet separated) he found these were shortened and

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72 Dart, 'Australopithecus africanus : The Man-Ape of South Africa', *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99; Dart with Craig, p. 15; Dart, 'The Inaugural John Irvine Hunter Memorial Oration', Sydney, unpubl. 1950, p10.

73 Dart with Craig, p. 8; Dart, *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99,

74 Dart, *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99.

retracted under the skull, not jutting forward, as in apes. He worked on, convinced now there would be a face for his creature and during this nerve-racking task was always fearful lest a slip on his part would ruin this priceless specimen.<sup>75</sup>

Sleep at night was impossible for Dart as he tried to visualize the form and life-style of this creature from way back in the dim mists of time. Perhaps, he pondered, it might be a rock-dweller amid a labyrinth of caves. Back to his bench he compared his specimen with the ape braincasts, which thankfully he had brought out with him from England.<sup>76</sup> In doing so he found it to be far removed. As to its face, he might soon see this as he was well on his way to removing its rock-encrusting mask. Then on the twenty-third day of his industry<sup>77</sup> he separated the rock from its face. Astoundingly, a child's face emerged; a child which saw the light of day after, as Dart thought at the time, its 'age-long sleep of nearly a million years',<sup>78</sup> though currently considered to be closer to three million years.<sup>79</sup> To Dart, 'The creature which had contained this massive brain was no giant anthropoid such as a gorilla. What emerged was a baby's face, an infant with a full set of milk (or deciduous) teeth and its first permanent molars just in the process of erupting'.<sup>80</sup> (figs. 44-48).

Dart realised that these teeth in no way resembled the infant gorilla or chimpanzee fangs in both jaws, behind which, especially in their jaws, were sharp-cutting infant molars.<sup>81</sup> 'I doubt if there was any parent prouder of his offspring than I was of my "Taungs baby" on that Christmas of 1924',<sup>82</sup> he joyfully related.

To the facts already assessed Dart marshalled more of substance to his paper on his 'Taung child' blasted from the limestone formation 130 kilometres north of Kimberley. The evident completeness of the specimen was of great importance because it showed 'an extinct race of apes

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75 Dart with Craig, *Adventures with the Missing Link*, pp.8-9.

76 Dart with Craig, p. 9; Grafton Elliot Smith, *The Illustrated London News*, 14 Feb. 1925, pp. 238-42.

77 Tobias, *Dart, Taung and the 'Missing Link'*, p 33, correcting in Dart with Craig, p. 10, seventy-third day, to twenty-third day.

78 Dart with Craig, p. 5.

79 Anita Allen, *The Star*, Johannesburg, 28 July 1995, p. 17.

80 Dart with Craig, p. 10.

81 Dart '*Australopithecus africanus* : The Man-Ape of South Africa', *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99.

82 Dart with Craig, p. 10.

intermediate between living anthropoids and man'.<sup>83</sup>

Dart determined that this fossil, with its humanoid features, was representative of one of a group much advanced beyond living anthropoids 'in those two dominantly human characters of facial and dental recession on the one hand, and improved quality of the brain on the other'. To him it did not represent an ape-like man of the Java form. He considered it well advanced over modern apes in facial and cerebral form, 'which are to be anticipated in an extinct link between man and his simian ancestor'.<sup>84</sup> He was however, unable to locate an area of temporal expansion in the brain concerned with speech, and thus considered the specimen 'no true man', but logically a 'man-like ape'. Because of these factors and the area of its geographical location, Dart named his pre-human stock *Australopithecus africanus*. He tentatively placed it in a new family, that of *Homo-simiadae*. In doing so he considered he had vindicated Darwin's claim that Africa would prove to be the cradle of mankind. Dart also confidently and correctly anticipated then that many complementary discoveries concerning this period in human evolution would eventuate,<sup>85</sup> a fact not previously pointed out by other writers.

Another important point which does not appear to have been covered by others was that in Dart's defined reference to the lower jaw of Piltdown he signalled the incongruity of this form in relation to its upper jaw, see below. Could this be the first strong hint he doubted the genuineness of the Piltdown specimen since the time he had seen John Hunter working with Elliot Smith on yet another reconstruction of it after Smith Woodward and Arthur Keith? Dart would have been in a position to make such a statement as he had seen and handled in London the components of this skull. Earlier several scientists in Britain, Europe and America had doubted that the lower jaw belonged to the Piltdown skull. Now in his Taung specimen he discussed the humanoid rather than the anthropoid form of the mandible, 'Its symphyseal region is virtually complete and reveals anteriorly a more vertical outline than is found in anthropoids or even in the jaw of Piltdown man'. In his specimen he found the anterior symphyseal surface scarcely

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83 Dart, *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp.195-99; Tobias, 'Excursions', Taung, Diamond Jubilee International Symposium, Johannesburg, University of the Witwatersrand, Johannesburg, 1985, p. 35.

84 Dart, *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp 195-99.

85 *ibid.*, pp. 195-99.

less vertical than that of Heidelberg man. The posterior symphyseal surface he pointed out differed between anthropoids and modern man, and made the point that in the area of the simian shelf, *Eoanthropus dawsoni*, (Piltdown or dawn man), differed little from the anthropoids, especially the chimpanzee. His Taung specimen he found showed no evidence of such a shelf, 'the lower border of the mandible having been massive and rounded after the fashion of the mandible of *Homo heidelbergensis*',<sup>86</sup> (now thought to be *Homo erectus* and dated at over 400 000 years old).<sup>87</sup> Dart had astutely assessed correctly faults in the lower jaw of Piltdown man, yet it would be another twenty-eight years before its crucial jaw and other faked parts would prove it infidel, and strip it of its false rank in human phylogeny.<sup>88</sup>

Perhaps Dart thought, at this point, that he had gone far enough, although he had other vital facts to relate. One in particular concerned the hole which had been made in the baboon skull Josephine Salmons had brought to him. He considered it to have been intentionally, perhaps even viciously inflicted. His interpretation of this damage he dared not whisper to a soul, much less mention in the paper he was preparing. His heretical ideas of the association of his Taung creatures and baboons must wait to be revealed.<sup>89</sup>

Assisted by student demonstrator Henri Le Helloco (later doctor) and some staff he prepared illustrations. With no photographic equipment in the Medical School he sought the services of an external photographer, also those of a typist towards preparation of his paper. He posted off his work to the prestigious journal *Nature* in England on 6 January 1925.<sup>90</sup> This was an

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86 *ibid.*, pp. 195-99.

87 William W. Howells, *Getting Here: The Story of Human Evolution*, The Compass Press, Washington, 1993, p. 142; *The New Encyclopaedia Britannica*, 15th edn. 1994, vol. 5, p. 802.

88 Dart, 'Australopithecus africanus The Man-Ape of South Africa', *Nature*, vol. 115, no. 2284, 7 Feb. 1925, pp. 195-99; J. S. Weiner, K. P. Oakley and W. E. Le Gros Clark, 'The Solution to the Piltdown Problem', *Bulletin of the British Museum of Natural History; (Geology)*, 2, 1953, pp. 141-45; J. S. Weiner, K. P. Oakley and W. E. Le Gros Clark, *BBMNH(G)*, 'Further Contributions to the Solution of the Piltdown Problem', 2 (6), pp. 225-87.

89 Dart with Craig, pp.13, 23; Dart, 'The Predatory Implemental Technique of *Australopithecus*', *American Journal of Physical Anthropology*, n.s. 7, Mar. 1949, pp. 1-38.

90 Dart with Craig, *Adventures with the Missing Link*, pp. 13, 23; Tobias, *Dart, Taung and the 'Missing Link'*, quoting from Dart's letter to Arthur Keith of 26 Feb. 1925; Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 10, May 1955, p. 292.



incredible achievement as it had only been forty days since he first cast eyes on and set to work assessing his *Australopithecus africanus*.<sup>91</sup>

Dart was to reveal later he knew his discovery went beyond all others in 'bridging the gap between man and his anthropoid ancestors'. He further advised that when he named it he did not claim it to be 'an ape-man, missing link or anything other than an ape, though I did feel a new family might have to be made to receive it'.<sup>92</sup>

Today the hominization story can be scientifically assessed with greater accuracy for not only are there available a more plentiful supply of fossil material and trained people to assess it, but there is also a range of dating methods which allow for more accurate assessment of the geological age of specimens. In 1925, however, pieces of the human life history jigsaw were fragmentary. Most naturalists before Darwin's and Wallace's theory believed species were immutable productions and had been separately created.<sup>93</sup> Only a few advanced thinkers believed species underwent modification. When strange fossil forms were unearthed as for example in 1829 of a child in the Engis Cave in Belgium and in 1848 of a woman and child in Gibraltar, their meaning could not be grasped. Fortunately in 1856 when a large skull with bony ridges over the eyes and a thick cranium was dug up in the Neander Valley in Germany it was retrieved by the owner of the land, then given to a teacher, J. C. Fuhlrott, who in turn handed it to Professor Schaafhausen of Bonn University for preservation thereafter. Because of these remains a few thinkers began to realise that man of a different type had previously existed. William King of Galway named this new species *Homo neanderthalensis*, the group to which those unknown earlier specimens would later be assigned. More Neanderthals were located in Spy, Belgium in 1886 and by 1910 many had been found at sites throughout Europe.<sup>94</sup>

With the publication of Darwin's *The Origin of Species* in 1859, initially severely vilified, as more fossil human-like remains came to light, Neanderthal Man became thought of as Darwin's first human witness to his

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91 Tobias, *Dart, Taung and the 'Missing Link'*, p. 33.

92 Dart with Craig, p. 16.

93 Charles Darwin, *The Origin of Species*, Murray. London, 7th edn., pp. viii, 402.

94 William W. Howells, *Getting Here; The Story of Human Evolution*, The Compass Press, Washington, 1993, pp. 134-37; John Reader, *Missing Links : The Hunt For Earliest Man*, Little, Brown & Co., Boston, 1981, p. 33.

theory of evolution. Nevertheless Neanderthal Man was for a long time considered to be a victim of disease, an idiot, a Cossack soldier or a current human, that is until more of its kind were unearthed.<sup>95</sup> Soon a different type of fossil was found in Java by Dubois which enhanced the wisdom of Darwin's theory. Eugene Dubois as a medical student in Amsterdam, Holland, had been fired by Darwin's work and his prediction of Africa as man's original home and also by Ernst Haeckel, the German scientist, whose view of Asia as man's place of origin. Dubois was more in favour of Haeckel's view. After a time as a lecturer in anatomy he joined the Army for medical service in the Far East, firmly with the intention to search for evidence of earlier forms of man. It remains one of the strangest coincidences of anthropology that he quickly succeeded, unearthing in Java part of a skull, some teeth and a thigh bone during 1890-91. In the first place he thought them ape remains but on consideration, his opinion of them was that they were those of an ape-like man, hence, after Haeckel, who predicted earlier *Pithecanthropus* (ape-man), Dubois named it thus. His life was never the same thereafter. Although his lectures in Europe of his discoveries met with favour on his finds, his interpretation of them did not, in that many disagreed the pieces were all from the same individual. His reaction was not to make his specimens available for nearly another thirty years.<sup>96</sup>

Another piece of the human jigsaw history unearthed in 1907 at Mauer near Heidelberg - a huge jaw with massive teeth and designated the oldest yet in Europe because its geological stratification could be accurately determined,<sup>97</sup> soon instigated one of the strangest quirks of the human fossil story. It convinced Charles Dawson, a lawyer-cum amateur fossil gatherer to search in the Sussex Weald, England, for one like it or even an older one. In a few years he found one, with official announcement of it on 15 December 1912 at a Geological Society meeting, that it was older than Heidelberg and to which the name Piltdown Man was attached.<sup>98</sup> It took pride of place as *Eoanthropus dawsoni*, which in time the American anthropologist, Earnest Hooton would anoint, 'Dame Eoanthropus, The First

95 Dart with Craig, *Adventures with the Missing Link*, p. 18.

96 John Reader, *Missing Links : The Hunt For Earliest Man*, Little, Brown & Co., Boston, 1981, pp 41-5; W. W. Howells, *Getting Here: The Story of Human Evolution*, The Compass Press, Washington, 1993, pp. 103-106; *The New Encyclopaedia Britannica*, 15th edn., Chicago, 1994, vol. 18, pp. 823-24.

97 *The New Encyclopaedia Britannica*, vol. 18, p. 826.

98 Arthur Keith, *The Antiquity of Man*, Williams & Norgate, London, 1915, pp. 304-5.

First Female Intellectual'.<sup>99</sup>

Meantime a huge fossil cranium had been unearthed in 1914 at Boskop in the Transvaal of South Africa. Dubois released two skulls in 1923, collected in 1899-90, though previously not shown, doing so now that he realised his Wajak skulls from Java bore some resemblance to the Australian Talgai skull, shown in Sydney in 1914.<sup>100</sup> Additionally two teeth and some obviously displaced flints in China in about 1922, suggested early human presence there, while Rhodesian Man found at Broken Hill in 1921 proved a Neanderthal-type man had occupied Northern Rhodesia (now Zambia) in a bygone era. Moreover, as Dart had written of earlier in 1923, South Africa had produced another form of man known as the Standlooper, while scattered deposits of stone tools highlighted earlier human presence throughout that country.

In 1925 Dart felt confident and proud of the work he had sent to *Nature*. He believed his assessments, particularly of the brain, to be irrefutable. He realised that his deliberations were pitted against contemporary opinion regarding the evolution of human<sup>101</sup> and that his theories might prove in opposition to those held by the scientific giants of English science and elsewhere, including those of his beloved mentor, Grafton Elliot Smith.<sup>102</sup> He knew only too well of their entrenched idea that a large brain was the phylogenetic imperative of humankind, other features evolving later. Yet even as Dart realised his claims were against accepted opinion, he felt so confident of his conclusions that he could anticipate nothing but eventual acceptance. As he later revealed, he experienced a sense of history about his immense good fortune in being given the opportunity 'to provide what would probably be the ultimate answer in the comparatively modern study of the evolution of man'.<sup>103</sup> Further, he felt optimistic of acceptance because of recent other discoveries and an increase in anthropological knowledge at hand since Darwin's work.<sup>104</sup>

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99 Earnest Hooton, *Up From The Ape*, Macmillan, New. York, 1946, 6th printing 1956, p.208.

100 Dart with Craig, p. 20; W. W. Howells, *Getting Here : The Story of Human Evolution*, 1993, p.194.

101 Dart with Craig, pp. 11, 17, 118.

102 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', p. 174; Dart with Craig, p. 118.

103 Dart with Craig, *Adventure with the Missing Link*, p. 17.

104 *ibid.*, p. 17.

What Dart did not foresee was the outright rejection of his claims. He recalled, 'I could never have dreamed in even my most pessimistic moods of the doubts—and in some cases scorn—that would be heaped upon my conclusions'.<sup>105</sup>

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105 *ibid.*, p. 15.

## CHAPTER 5

### A WORLD SCOOP : CONTROVERSY EXPLODES

How would Dart handle the anxious weeks of waiting news of his paper sent to *Nature*; would there be any doubts in his mind for its acceptance? Would any coincidental happenings promote its publication; if so, would Dart play these to advantage? How might he react to any criticism or rejection of his work? Would others intervene to assist and encourage him? As was his way Dart characteristically had taken an educated gamble with the *Star* editor as a means to once more publicise his work to the public. In so doing had he hoped public release of it might influence its publication in the journal *Nature*?

It would be some time before the slow mail boat would arrive in London with Professor Dart's paper for *Nature* on his Taung skull. In the interim he set about working on his further contribution of his specimen, an enlarged monograph. First though, he must try to separate the lower and upper jaws for an additional accurate description of the teeth, particularly the crowns.<sup>1</sup> He would take another four years to do so.

As he worked and waited for news of his paper's arrival at *Nature's* desk, events took an unplanned but vital turn. F. R. Paver, the news editor of the *Star* in Johannesburg, and Dart's friend, dropped in at the anatomist's office at the Medical School to ask his opinion on Sir Arthur Keith's recent remarks about the Broken Hill skull, an observation cabled to Paver from London.<sup>2</sup> The news editor was also an amateur archaeologist who had already published many of Dart's reports on scientific discoveries and medical items, and knew that the young professor's comments would be both reliable and newsworthy. Dart readily obliged, but it was his remark to Paver of having 'something of worldwide significance connected with man's origin to announce shortly',<sup>3</sup> which drew this news sleuth, ever on the lookout for a scoop to quick attention and a flood of questions.

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1 Dart with Craig, *Adventures with the Missing Link*, p. 54; R. Broom, *Finding the Missing Link*, Watts & Co., London, 1951, 2nd edn., pp. 31-32.

2 Dart with Craig, *Adventures with the Missing Link*, p. 23; P. V. Tobias, *Dart, Taung and the 'Missing Link'*, p. 35.

3 Dart with Craig, p. 23.

From this timely request of Dart to comment on Sir Arthur Keith's opinion of the Broken Hill skull, it will be seen that Keith in fact primed the spark which lit the flame for worldwide release of Dart's discovery; a fact, of which Keith himself would ever be unaware. Dart said to that date he had 'played a lone hand'<sup>4</sup> with his Taung skull, but admitted that it might have been 'Paver's long, wistful look mixed with my own pride—or vanity—and an overwhelming impulse to confide in somebody who combined interest with understanding, loosened my tongue a little'. When confiding his secret, Dart, as was his manner, now had some fun, teasing Paver a little in the details of his find, though at the same time extracting a firm pledge from the news editor to publish the story only after *Nature* had made its own announcement of the discovery. Confidence in this man's integrity Dart knew would be secure, and was; Paver's repayment would be his world scoop.<sup>5</sup>

Nearer to the time of estimated publication of his article in *Nature*, which Dart thought in all likelihood might be about the end of January, Paver cabled that journal enquiring if Dart's paper had arrived and asking what they intended doing with it. Richard Gregory (later Sir), editor of *Nature* cabled his reply to Paver that it had been received, advising also 'but the discovery and claims were of so unprecedented a character that the account had been referred to various experts in England who had been asked to give opinions on whether or not it should be published'. Paver's forceful reply, with Dart's concurrence, informed that the *Star* could not withhold release of Dart's discovery beyond the evening edition of 3 February 1925.<sup>6</sup>

In truth Dart's gamble was having its influence as meanwhile the Taung paper and the *Star's* cables were stirring consternation in London scientific circles, such events noted by Sir Arthur Keith in his diary at the time and reproduced from it twenty-five years later in his own book, *An Autobiography*:

On the day of my last lecture at College (January 30, 1925), Gregory, the editor of *Nature* (now Sir Richard Gregory, Bt., who is

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4 *ibid.*, p. 22.

5 Dart with Craig, *Adventures with the Missing Link*, pp. 23-24; F. Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile*, Transpareon Press, Sydney, 1983, pp. 41-42.

6 Dart with Craig, p. 33; Tobias, *Dart, Taung and the 'Missing Link'*, pp. 35-36; John Reader, *Missing Links: The Hunt For Earliest Man*, Little, Brown & Co., Boston, 1981, pp. 88-89.

two years my senior) rang me up and told me he had received an article from Dart describing a new "missing link." I advised publication; on the morning of February 3, I received a proof of Dart's article (on the discovery of the Taungs fossil skull); on working over the article I saw that the skull was that of an anthropoid. On the night of the 3rd (a Tuesday) reporters came in troops in consequence of a cable from South Africa. I kept quiet and left the talking to Elliot Smith; wrote an article for the *Sunday Times* (February 7) and for the *British Medical Journal* (February 14) and also a commentary for *Nature*.<sup>7</sup>

That *Nature* did not publish the extraordinary item by 3 February provided Paver with his scoop for that evening's news release for the *Star*, a scoop about the discovery in South Africa of a 'missing link', which morning papers flashed around the world on 4 February 1925. Dart on that day, his thirty-second birthday, could not have received a more wonderful present.<sup>8</sup>

Had Dart calculated correctly? What might be the reception of news of his discovery? To his further delight congratulatory cablegrams came from Elliot Smith and his staff at the Institute of Anatomy, University College, London - Dart's revered and still greatly missed spiritual home. Alès Hrdlička, Curator of Physical Anthropology at the Smithsonian Institution in Washington, DC, requested articles as also from that city did the *Science News Service*. Publishing houses in many countries offered book contracts, including Oxford University Press in England. News also arrived in Johannesburg of Sir Arthur Keith's first press statement. It gratified Dart inasmuch as Keith stated on 4 February that he felt Dart was not likely to be led astray, and that if he had thoroughly examined the skull the scientists were prepared to accept his decision. Only Dart himself could know how thoroughly he had scrutinized the fossil.<sup>9</sup>

Congratulatory messages also arrived at his desk from South Africa itself, among them one from Dr Robert Broom, a noted Scottish scientist practicing medicine, now living in Douglas, Cape Province. Next came a letter from General Jan Christiaan Smuts written from his home in Irene, a

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7 Arthur Keith, *An Autobiography*, Watts & Co., London, 1950, p. 481; Dart with Craig, p. 33.

8 Dart with Craig, *Adventures with the Missing Link*, p. 34; Tobias, *Dart, Taung and the 'Missing Link'*, p. 36; John Reader, *Missing Links : The Hunt For Earliest Man*, p. 89, incorrectly notes Dart's age as thirty-three years instead of thirty-two years at the time.

9 Dart with Craig, *Adventures with the Missing Link*, pp. 34-35; F. Wheelhouse, *Raymond Arthur Dart : A Pictorial Profile*, p. 42; Tobias, *Dart, Taung and the 'Missing Link'*, p. 36.

missive that over the course of time probably became Dart's most treasured. At that moment General Smuts (later Field Marshal) was temporarily absent from the political scene and engaged instead, in hobbies of botany, philosophy and anthropology. He wrote:

I wish personally and as President of the South African Association for the Advancement of Science to send you my warm congratulations on your important discovery of the Taungs fossil. Your great keenness and zealous interest in anthropology have led to what may well prove an epoch-making discovery, not only of far-reaching importance from an anthropological point of view, but also calculated to concentrate attention on South Africa as the great field for scientific discovery which it undoubtedly is. The recognition of the unique importance of the Rhodesian Broken Hill skull in human evolution has now immediately been followed by your discovery which seems to open up still further vistas into our human past.

I congratulate you on this great reward of your labours which reflects lustre on all South Africa and I wish to express the hope that many further triumphs await you and those who have so willingly co-operated with you on the road on which you have begun so well.<sup>10</sup>

Praise and congratulations came from many in South Africa. The warm message from Jan Hofmeyr, Administrator of the Transvaal must have appealed to Dart's sense of irony. When Dart was appointed Professor of Anatomy in October 1922 by the Senate of the University of the Witwatersrand,<sup>11</sup> Hofmeyr was Principal and wrote to Dart's London referees regretting that the appointee was an Australian.<sup>12</sup> Now in approbation and congratulations to Dart on his discovery he further noted, 'It is one of those things that make one (occasionally) regret having left the University'.<sup>13</sup>

A lengthy editorial in the *Observer*, London, of 8 February on 'The Taungs Skull' Dart considered, 'unusually thoughtful'.<sup>14</sup> At one point the editor commented with special effect that some might consider the discovery of a damaged skull in sub-tropical Africa as of little importance; that it would

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10 Dart with Craig, *Adventures with the Missing Link*, quoting from Smuts's letter, pp. 34-35; F. Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile*, p. 42; Tobias, *Dart Taung and the 'Missing Link'*, p. 36.

11 Bruce K. Murray, *Wits The Early Years: A History of the University of the Witwatersrand Johannesburg and its Precursors 1896-1939*, Witwatersrand University Press, Johannesburg, 1982, p. 179.

12 Dart with Craig, p. 32; Tobias, *Dart, Taung and the 'Missing Link'*, p. 36.

13 Dart with Craig, p. 35; F. Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile*, p. 42.

14 Dart with Craig, *Adventures with the Missing Link*, p. 39.



not affect people materially as had the discovery of wireless or electric light. In his opinion, however, the stimulus to all man's progress 'is man's innate belief that he can grasp the scheme of things or his place therein'.<sup>15</sup> This stimulus, he continued, compelled man to track back to his remote past and reflect on his future, and that knowing his past he could more readily discern his future. Darwin's important scientific work, the editor noted, had invited further enquiry by archaeologists of man's roots and cultures. He finally declared:

Viewed in some such intellectual context as this, the Taungs skull is at once a reminder of limitations and an encouragement to further endeavour. Its importance, significant in itself, is enhanced by the fact that its message has been preserved through unimaginable ages for discovery here and now.<sup>16</sup>

Dart nevertheless had begun to wonder if his expert colleagues in London would, in the end, receive his work as wholeheartedly. What conclusion might Keith himself reach? In an interview with the London correspondent of the *Rand Daily Mail* in London a few days after the discovery had been flashed worldwide, his words left Dart feeling disturbed. At first complimentary and in agreement with Dart's main contentions for the Taung skull, Keith then disagreed and even sounded confused; yet, and in the next breath, the doyen of anthropologists appeared to endorse most of Dart's claims. The reporter noted:

Sir Arthur said Professor Dart's lucid explanation of his discovery gave scientists here the information they required, and they were able to follow him so clearly that they had a very good knowledge of the value of the find.<sup>17</sup>

Quoting Sir Arthur Keith, the reporter continued:

Professor Dart deserves great credit. He has certainly lived up to the opinion we formed of him here. I think he has done very well indeed. After all his discovery should not have come in the nature of a shock. It is rather in keeping with developments which have been going on in South Africa for some years.

What do the geologists say regarding this discovery? Am I right in supposing Dart's find was made in a filled-up cave that had

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15 *Observer*, London, 'The Taungs Skull', 8 Feb. 1925, as noted in Dart with Craig, *Adventures with the Missing Link*, p. 39.

16 Dart with Craig, p. 39.

17 *Rand Daily Mail*, 'The Taungs skull - Sir A. Keith's View - Not in the Human Line - Agreement with Prof. Dart', 7 Feb. 1925.

been obliterated in the course of time. We want to know when Dart's man-like ape was living.<sup>18</sup>

Sir Arthur Keith further questioned:

The geological evidence has a tremendous lot to do with the meaning of Dart's discovery. My own opinion is that it is not perhaps so very old geologically. Then we have to consider what sort of beast it is that Dart has got hold of. I certainly agree with him in all his main contentions. What he has discovered appears to be an unknown form of man-like ape. The photographs impress me with the similarity to the gorilla and chimpanzee, and the impression I form is that it is really nearer akin to them. But I also agree with Dart that it is more human than either.<sup>19</sup>

Although on 14 February 1925 *Nature* published the opinions on Dart's discovery by Sir Arthur Keith, Grafton Elliot Smith, Sir Arthur Smith Woodward and Dr W. L. H. Duckworth, Dart in all probability would not have read these until at least a fortnight or three weeks later, when the journal would have arrived by boat from England. He would, therefore, not have known immediately of the general non-acceptance of his assessments by them. He would, however, have read Sir Arthur Keith's reasonably supportive account in the *Rand Daily Mail* mentioned above, dated 7 February, so possibly felt he could write to him on 26 February of Dr Broom's visit to him on 21-22 February, advising him of Broom's added support of his own assessment of the Taung skull.<sup>20</sup> As revealed by Professor Phillip Tobias, Dart was at the time answering a letter from Keith who had written congratulating Dart on his Taung discovery. Tobias points out also Dart in his letter to Keith advised him of the actual date he had received the specimens from Professor Young, that of 28 November 1924. This information enabled Tobias to confirm this date—information he had sought for years, and also to confirm that Dart sent his paper to *Nature* on 6 January 1925. Another prophetic sentence in Dart's letter to Keith and quoted by Tobias is illuminating:

But if any errors have been made they are all on the conservative (ape) side and it is certain that subsequent work will serve only to emphasise the *human* characters.<sup>21</sup>

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18 *ibid.*, 7 Feb. 1925.

19 *ibid.*, 7 Feb. 1925.

20 Tobias, *Dart, Taung and the 'Missing Link'*, p. 32.

21 Tobias, *Dart, Taung and the 'Missing Link'*, pp. 32-33, quoting from a copy of Dart's letter to Keith, 26 Feb. 1925, as supplied to him by Dr Ian Langham, Lecturer in

Although Broom wrote to Dart on 8 February 1925, 'Your missing link is really glorious. Perhaps I may make a trip up to Joburg for a day and pay my respects to my distinguished ancestor', he gave no firm date of his arrival.<sup>22</sup> Thus he aroused surprise when he arrived unannounced. Never one to stand on ceremony, Professor Dart and his staff would not forget Broom bursting into the laboratory unheralded. Dart recalled, 'Ignoring me and my staff, he strode over to the bench on which the skull reposed and dropped on his knees "in adoration of our ancestor," as he put it'. It is said Broom then turned with his quizzical smile and looking up over his spectacles viewed his stunned onlookers.<sup>23</sup> Dart thoroughly relished his first meeting with Robert Broom.

Twenty-seven years Dart's senior, Robert Broom had been born in Paisley Scotland in 1866. After winning his BSc. in 1887, his CM in 1888 and his MB in 1889 at Glasgow University, planning a practice in medicine, he visited the United States twice to reconnoitre opportunities. However because of a growing interest in the anatomy and embryology of Australian mammals, he followed his brother to the island continent in 1892 to study zoology in his spare time. There he practiced medicine in north Queensland and from 1893 in New South Wales, in which year he married in Sydney his childhood sweetheart, Mary Baird Baillie, who had come out from Scotland, the year of Raymond Dart's birth. As a side line to his medical practice he engaged in collecting plant and animal specimens also fossil collecting and his papers on the anatomy and embryology of Australian mammals established his reputation as a comparative anatomist.<sup>24</sup>

The extraordinary coincidence of both Broom and Elliot Smith separately publishing in overseas journals, and unknown at the time to each other, articles on the Organ of Jacobson in the Monotremata (duck-billed platypus and spiny ant-eater) determined shortly their personal acquaintance. Broom not only met this young medical graduate at the University of Sydney but also his Professor, James T. Wilson (then of the

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History and Philosophy of Science at the University of Sydney, per custodians of the Keith Papers, Royal College of Surgeons, England.

- 22 Dart with Craig, *Adventures with the Missing Link*, p. 35; 'Skull Wars', Cine Nova Productions, Toronto, Canada, video, 24 Jan. 1996; Raymond A. Dart, 'Robert Broom—His Life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p. 12.
- 23 Dart with Craig, *Adventures with the Missing Link*, p. 35; Dart, Preface to *Dr Robert Broom F.R.S.*, by G. H. Findlay, Balkema, Cape Town, 1972.
- 24 L. H. Wells, 'One Hundred Years : Robert Broom 30 November, 1886—6 April, 1951', *S. Afr. J. Sci.*, vol. 63, no. 9, Sept. 1967, p. 358.

Anatomy Department and later of Cambridge), Charles Martin (later Director of the Lister Institute), J. P. Hill (afterwards Professor of Zoology at University College, London) and W. C. Haswell, Professor of Zoology. All were then concerned with studies of monotremes and marsupials, the most primitive of living mammals, and from which time lifelong friendships grew and a continued exchange of scientific work and specimens was maintained. Broom left Sydney for England in 1896 (as did Grafton Elliot Smith for Cambridge), taking with him Wombeyan Cave fossils from south of Sydney for presentation to Sir William Turner of Edinburgh University, then the foremost anatomist and anthropologist in Great Britain.<sup>25</sup>

After studying in London the Natural History Museum's Karroo fossils from South Africa which Professor H. G. Seeley had noted seemed to have association with the most primitive mammals, Broom left for South Africa and in Namaqualand, collected and studied these forms and numerous other South African animals. While there he sent his overseas colleagues a variety of specimens, and in this regard is said to have aided immeasurably Grafton Elliot Smith with his research. In 1897 he was elected a Fellow of the Linnaean Society of New South Wales, in which year he also supplied from South Africa to Sir William Turner of Edinburgh, some Hottentot skulls. A letter to a friend reveals Broom was never one to disguise his methods of specimen acquisition, no matter how revolting. He noted the drought had brought many old Hottentots into Port Nolloth where several died. 'I cut their heads off and boiled them in paraffin tins on the kitchen stove and sent them to Turner'.<sup>26</sup>

Broom returned to England in 1898 and in 1900 determined that he would live and practice medicine and hunt fossils and other living specimens while based at Pearston in the Karroo. There, 'the tremendous field of Broom's Karroo research in reptilian fossils locked him to the bosom of Africa'.<sup>27</sup> Over the Karroo, this arid to semi-arid geographic region of the Cape interior, barren of surface water (Karoo in Khoisian means 'land of thirst'), covering 395 000 square kilometres he searched for and gathered with many other famous collectors including Alfred 'Gogga' Brown, Drs

25 Dart, 'Robert Broom—His Life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, 1952, pp. 6-7; L. H. Wells, *S. Afr. J. Sci.*, vol. 63, no. 9, Sept. 1967, p. 359.

26 L. H. Wells, *S. Afr. J. Sci.*, vol. 63, no. 9, Sept. 1967, p. 359.

27 N. W. G. Macintosh, 'Homage to the Memory of Doctor Robert Broom from his Colleagues in many parts of the World', *S. Afr. J. Sci.*, vol. 63, no. 9, Sept. 1967, p. 368.

Kannemeyer and Schonland, the Rubidges and the Kitchings, priceless fossil specimens.<sup>28</sup> From the non-marine sediments of shales, red beds, siltstones and volcanic material emanating from rocks of the Permian or Carboniferous Period of 286 million years ago to the later Triassic Epoch of 230 to 208 million years ago, hosts of specimens were extracted, some among them revealing the vital link between early mammal-like reptilian forms, which Broom's research substantiated the progenitors of the true mammals.<sup>29</sup>

Bestowal of honours on Broom followed. In 1901 he was elected a Fellow of the Zoological Society of London. A further honour came in 1903 with his appointment as Professor of Zoology and Geology at the Victoria College at Stellenbosch in the Cape. This allowed him now to dispense with *his medical practice*. At the same time he held the position of Curator of Fossil Vertebrates at the South African Museum in Cape Town, where within seven years he not only refurbished the fossil collections but had published over one hundred scientific papers. In 1905 he was awarded the DSc. of Glasgow University.<sup>30</sup>

Broom, a lone worker, was not known to avoid an argument, or to let an occasion pass which might net him a specimen. On one occasion he drew the ire of the Director of the South African Museum, Dr Louis Peringuey, by rescuing from his rubbish bin without his permission, a discarded ant-bear carcass, then added further fuel to this matter by writing several papers on it. Broom was known to have had an impish and irrepressible sense of humour.<sup>31</sup> At the same time he could be at odds with many bodies including the medical profession and once proposed it should be in charge of marriage and not the clergy.<sup>32</sup> A colourful character, at times Broom's behaviour verged on the eccentric, as for example his always wearing for field work a 'dark suit and waistcoat, long-sleeved white shirt

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28 *The New Encyclopaedia Britannica*, 15th edn, vol. 6, 1994, pp. 750-51; Dart, 'Robert Broom - his life and work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, pp. 8-9.

29 *The New Encyclopaedia Britannica*, vol. 6, 1994, pp. 750-51; Dart, 'Robert Broom - his life and work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, pp. 7-9.

30 Dart, 'Robert Broom—his life and work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, pp. 7-9.

31 Dart quoting from Obituary in the *Rand Daily Mail* n.d.; 'Robert Broom - his life and work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p.18.

32 Dart, 'Robert Broom - his life and work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p.18.

and stiff collar with its turned back corners and sombre tie'.<sup>33</sup> His physical stamina and endurance of heat while collecting specimens was amazing at which task he mostly outlasted those accompanying him, including those quite young. He was known when collecting to become so absorbed retrieving specimens that at times he would strip naked to prize out a valuable specimen. At other times it was not unusual for him to arrive home clad only in his underwear, and laden down with specimens 'wrapped up in his suit'.<sup>34</sup>

His avid collecting habit was said to have been instilled in him from childhood by the influence of his father and his religious outlook by the influence of his Plymouth Brethren mother. It was said that by contrast with Sir Arthur Keith he had 'a fundamentalist religious background', and that he 'admired the reliable, anti-Darwinian palaeontologist, Sir Richard Owen; and had mistrusted the fluent, agnostic T. H. Huxley'.<sup>35</sup> In fact he considered himself scientific heir to Sir Richard Owen. He aligned himself with Alfred Russel Wallace's idea that a superior intelligence had guided the development of man in a definite direction and for a special purpose.<sup>36</sup> He also believed 'his work on earth was but a preparation for a correspondingly vaster work beyond this sphere'.<sup>37</sup> He further disturbed people by his belief that physical evolution was now completed and what lay before humanity was the evolution of its personality. In later life he was said to be deist rather than orthodox Christian. He advised he did 'not believe in an anthropomorphic deity', though believed in the power of prayer. He favoured a complete theory regarding spiritual elements in human nature, summarizing it as 'a little like that of Plato and a little like Freud, but I think much better than either'.<sup>38</sup> Raymond Dart succinctly noted:

So Broom's life had been devoted to finding out the anatomical realities (as far as the most primitive living mammals of Australia and the most advanced of fossilized mammalian-like reptiles of Africa could reveal them) of the evolutionary process and also to

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- 33 Dart, 'Robert Broom—his life and work', *S. Afr., J. Sci.*, vol. 48, no. 1, Aug. 1951, p. 19; Roy Terry, *Raymond Dart: Taung 1924-1974*, The Museums of Man and Science, Johannesburg, 1974, p. 3.
- 34 Dart, 'Robert Broom - his life and work', *S. Afr. J. Sci.*, vol 48, no. 1, Aug. 1951, p. 19.
- 35 Dart, 'Recollections of a Reluctant Anthropologist', *J. Hu. Evol.* vol. 2, 1973, p. 422.
- 36 L. H. Wells, 'One Hundred Years: Robert Broom 30 November, 1966—6 April, 1951', *S. Afr. J. Sci.*, vol. 63, no. 9, sept. 1967, p. 363.
- 37 Dart, 'Robert Broom - his life and work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p. 18.
- 38 L. H. Wells, 'One Hundred Years: Robert Broom 30 November, 1866—6 April, 1951', *S. Afr. J. Sci.*, vol. 63, no. 9, Sept. 1967, pp. 362-63.

reconciling it with his faith in its design.<sup>39</sup>

In 1909 in London Broom met Professor Fairfield Osborn, the renowned palaeontologist and Director of the American Museum of Natural History in New York, who extended him an invitation to later visit him there. While in London in 1910 he received the Snell Geological Fund then returned to South Africa. By now came deterioration of relationship with his Cape colleagues. He resigned his positions and moved north to the Witwatersrand, took up his medical practice, and also undertook a pioneer study of fossil mammalian remains associated with stone implements at Florisbad mineral springs site near Bloemfontein. By 1913 another honour was bestowed on him, that of Croonian Lecturer to the Royal Society in London to deliver his lectures on the 'Origin of Mammals'.<sup>40</sup>

Broom's work on the Karroo fossils of South Africa and his unravelling of the evolution of mammals there from mammal-like reptiles had gained him eminence in this field amongst world anatomists and anthropologists. He would however soon destroy his high scientific prestige and fall from grace in South Africa by his action in 1913 of shipping his large and rare collection of Karroo fossils to Professor Osborn in New York. While there he prepared catalogues of them and arranged exhibitions. Remarkably in the few months he was there he produced a record-breaking number of papers - thirty in all. He returned to England in early 1914, and joined the Royal Army Medical Corps when war broke out later that year. Now aged forty-eight years, on being precluded from overseas service he returned to South Africa in 1916 and settled in Douglas. For eleven years while there he practiced medicine, collected fossils and was elected Mayor of Douglas for several terms. His election in the 1920s as a fellow of the Royal Society in London helped lift his scientific stakes somewhat as did his 1923 paper on 'The Yellow-skinned Races of South Africa'. Now in 1925 he found himself involved most interestingly in pure human palaeontology, edged by the desire to better understand the peculiarities of human evolution. With his arrival in Johannesburg, Dart felt particularly grateful to this Scotsman as he was the first scientific visitor to come to see his Taung child.

Dora and Raymond Dart would host Dr Broom in their Melrose home

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39 Dart, 'Recollections of a Reluctant Anthropologist', *J. Hu. Evol.* vol. 2, 1973, p. 422.

40 Dart, 'Robert Broom—his life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p. 10.

during the week-end of 21-22 February 1925 in which time Broom made his study of the Taung skull.<sup>41</sup> When news spread of the great scientist's presence in town, Christiaan Beyers, the newly wed in the Dart's home and the Dart's 'earliest and chief friend in South Africa', organised a banquet in Broom's honour at the Pretoria Club. Beyers had been an early student of Broom's at the Stellenbosch University in the Cape and his temporary successor at that University. From this first meeting with Broom grew the Dart-Broom lifelong friendship and with others as well.<sup>42</sup>

Now aged fifty-nine, the Scot spent all of his week-end at the Dart's in close and combined examination with his host of *Australopithecus africanus* and left Melrose convinced of his young colleague's correct interpretation of the skull. He wrote at once of his findings to *Nature*, and of his gratitude to Dart:

Prof. Dart not only allowed me every facility for examining the skull, but also gave me with almost unexampled generosity full permission to publish any observations I made on it, and suggested further that I might send to *Nature* any notes that might amplify the account he had already given.<sup>43</sup>

Broom had acted quickly when back in Kimberley from seeing Professor Dart in Johannesburg. The *Cape Times* of 25 February 1925 printed his views, 'The skull is...probably the most important ancestral human skull found. In fact I regard it as the most important fossil ever discovered'.<sup>44</sup> Dart himself also lost little time in writing a note to Sir Arthur Keith on 26 February 1925 advising that Broom had visited him and that together they had gone over the skull very carefully. He advised Arthur Keith further, 'He places it in the direct line and if anything nearer Piltdown man than I have cared to place it...Two particular questions we were able to solve together—one is that the great wing of the sphenoid articulates with the parietal and the second that the premaxilla-maxillary suture is humanoid and not anthropoid. Further the first permanent molars, although large (14

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41 Dart with Craig, *Adventures with the Missing Link*, p. 35; Tobias, *Dart, Taung and the 'Missing Link'*, p. 37.

42 Dart, 'Robert Broom—his life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p. 12.

43 Robert Broom, 'Some Notes on the Taungs Skull', *Nature*, vol. 115, no.2894, 18 Apl. 1925, p. 569. The word *Nature* is not italicized in this article.

44 Tobias, *Dart, Taung and the 'Missing Link'*, quoting from the *Cape Times*, 25 Feb.1925.



mm. x 14 mm.), are remarkably human in their characters—cusps etc'.<sup>45</sup> Broom included these and many other points in his article to *Nature*, also an outline of from where the Taung skull had been extracted among a mass of secondary limestone some hundreds of feet thick at a spot 21.3 metres high where this deposit was then being worked. He pointed out that already '250 feet have been quarried away. On the face about 50 feet below the top of the mass, an old cave is cut across which is filled up with sand partly cemented together with lime, and it is in this old cave that the skull of *Australopithecus* has been found'. He mentioned the several baboon skulls found at the site and also bones of a hyrax and remains of a tortoise. He gave detailed drawings and tables, advising of *Australopithecus*, 'If an attempt be made to reconstruct the adult skull (Fig. 5), it is surprising how near it appears to come to *Pithecanthropus erectus*—differing only in the somewhat smaller brain, and less erect attitude'. In his opinion there seemed, 'Considerable probability that adult specimens will yet be secured, and if the skeleton as well as the skull is preserved, the light thrown on human evolution will be very great'.<sup>46</sup> Meanwhile in addition to his paper to *Nature*, Broom had also despatched one to America for the journal, *Natural History* in New York and wrote to his friend in Oxford, Professor W. J. Sollas.<sup>47</sup>

How Dart must have despaired when reading Keith's article of 14 February in the *British Medical Journal*, and on noticing Keith's mood of change in stating that Dart's 'discovery of a "missing link" in South Africa has fallen like a bombshell on anthropological Europe'. However, in part, Keith was praising of Dart's find as remarkable and largely due to his 'initiative and perspicuity'. Keith also noted that even though the finder was limited by lack of research data, 'his main conclusions are certain to stand'. After this fine appraisal Keith demonstrated his disagreement and his confusion:

The face in all its lineaments is that of an anthropoid ape; there are blended in it some features of chimpanzee, others of the gorilla, and some which belong to neither. But of humanity there is no trace save in one respect—its jaws are smaller and its supraorbital ridges

45 Tobias, *Dart Taung and the 'Missing Link'*, p. 37, quoting from Dart's letter to Arthur Keith of 26 Feb. 1925.

46 R. Broom, 'Some Notes on the Taungs Skull, *Nature*, vol. 115, no. 2894, 18 Apl. 1925, pp. 569-71. Note: In some places in this article the word *Australopithecus* is not italicized.

47 Dart, 'Robert Broom - his Life and Work, *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p.12.

less developed than a chimpanzee of corresponding age. There is a reduction in jaw development, and such reduction has certainly taken place in the evolution of man.<sup>48</sup>

Dart must have experienced some concern when he read *Nature* of the same date, Keith's article together with those of the three other scientific experts selected by that journal to comment on 'The Fossil Anthropoid Ape from Taungs'.<sup>49</sup>

### Controversy Explodes

How important would be the views of Dart's discovery of those four experts selected by Richard Gregory, the editor of *Nature*? Surely in world anthropological terms they would be paramount. Eminent scientists all; other than Dr W. L. H. Duckworth, the three others, Grafton Elliot Smith, Sir Arthur Keith and Sir Arthur Smith Woodward, (knighted in 1924) were Fellows of the Royal Society. This prestigious society, the oldest in Great Britain, fully titled, Royal Society for the Promotion of Natural Knowledge, was founded in 1660, granted its Charter in 1662 by Charles 11, and began in 1665 its publication *Philosophical Transactions*, and by the 18th century had gained international fame.<sup>50</sup> Now in 1925 the views of three of its current members were sought to adjudge work, of whom the views of two would rate as highly respected—those of Sir Arthur Keith and Grafton Elliot Smith. Both were scientists who had been for years at the pinnacle of their careers; both were acknowledged as world authorities in their fields. Each had local and world-wide contact, mostly on a personal basis with those in the fields of medicine, geology and achievements in anthropological enquiry, and kept up to date in these spheres of discoveries and new theories. To name a few, among their contacts in Britain were Sir William Turner, famous anatomist at Edinburgh University, Sir Edwin Ray Lankester holder at one time of Chairs of Zoology and Comparative Anatomy at University College, London and at Oxford, and later Director of the British Museum and Keeper of Zoology; Alexander Macalister, Professor of Anatomy at Cambridge, while

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48 Arthur Keith, 'The New Missing Link', the *British Medical Journal*, 14 Feb. 1925, p. 325.

49 *Nature*, vol. 115, no. 2885, 14 Feb. 1925, pp. 234-36.

50 *The New Encyclopaedia Britannica*, 15th edn., vol. 10, 1993, p. 220.

William Johnson Sollas, held the Chair of Geology at Oxford.<sup>51</sup> Some known to them on the Continent were Marcellin Boule, professor at the Muséum National d'Histoire Naturelle in Paris from 1902, geologist, palaeontologist and physical anthropologist, the first to reconstruct a complete Neanderthal man skeleton in 1908 and with expertise in the correlation of geological and archaeological evidence to establish the sequence in remote areas. At the same Museum was the Abbé Henri Breuil the noted archaeologist. Another French contact was Père Teilhard de Chardin, philosopher and palaeontologist. Among colleagues in Germany were Ernst Haeckel, zoologist and evolutionist in Berlin University and a strong proponent of Darwinism who proposed new notions of the evolutionary descent of man and suggested the importance of the cell nucleus in inheritance; Gustav Schwalbe of Strasbourg University who made influential studies of the human fossil record. In the United States of America colleagues were Henry Fairfield Osborn, palaeontologist and museum director professor of natural history and also comparative anatomy, who studied brain anatomy and mammalian fossils; Alès Hrdlička, Bohemian-born American physical anthropologist, famous for his studies on Neanderthal man and for his theory of migration of American Indians from Asia, expedition leader to human fossil sites, curator of physical anthropology collections at the Smithsonian Institution; at the same Museum Gerrit S. Miller, mammalogist, William Gregory King, vertebrate palaeontologist, specialising in dentition and George Grant MacCurdy, physical anthropologist at Yale University<sup>52</sup>

Both Arthur Keith and Elliot Smith had excelled in academia. Arthur Keith, (fig. 49), son of a Scottish farmer (born 5 February 1866) had graduated top of his medical studies at Aberdeen University in 1888. After holding a position at a Scottish mental asylum, where he also analysed preserved human brains, his dream of seeking further knowledge of man's evolution was directed from 1889 when he was appointed as a doctor to a gold-mining company in Siam (now Thailand). Not only would he care for the health of mining staff, often treating tropical fevers and diseases which claimed many lives, but he found time to make deep studies of monkeys in the area. In his three years there he would dissect scores of their brains

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51 Frank Spencer, *Pittdown: A Scientific Forgery : based on Research by Ian Langham 1942-1984*, Oxford University Press, 1990, pp. xix-xxvi; Arthur Keith. *An Autobiography*, Watts and Co., London, 1950, p. 192.

52 *ibid.*

and study their anatomy. Back in London in 1892, he achieved his FRCS (Fellowship of the Royal College of Surgeons) and his MD (Medical Doctor) qualifications and by 1895 he gained a position as demonstrator of anatomy at the London Hospital Medical College, advancing to lecturer, then to its chief position. While there he extended his studies of brains to anthropoids, humans and other species. In 1908 his most prestigious appointment as Conservator of the Royal College of Surgeons allowed him immense scope to further his brain and anthropological research, write his scientific papers and produce many books. Widely travelled, his pre-eminent position assured him close association and friendship with royalty, knights of the realm, politicians, scientists world wide, newspaper editors, including Richard Gregory editor of *Nature*, whom he had known since his sub-editor days.<sup>53</sup>

Arthur Keith revealed that there was no doubt in the back of his mind of 'the mad ambition that some day what I have thought and written may gain me credit with those who cultivate the same narrow field of knowledge that I have laboured in'.<sup>54</sup> In earlier days he had studied the fine collections at the Royal College of Surgeons and never dreamt he would be fit to step into the shoes of great men like Sir Richard Owen or Sir William Flower, two of its earlier Conservators.

Keith described himself as 'aggressive, proud, assertive and competitive', also 'jealous' at times, and a showman, and mentions that from his youth he had 'accepted the creed of Liberalism with a feeling against all sorts of class discrimination and privilege'.<sup>55</sup> However, it is said that in his writings on evolution he tended to emphasize the competitive factor and interpreted racial and national prejudice as inborn.<sup>56</sup> Though he produced substantial excellent publications to date, rejection in 1900 of his ten-year work, 'The Relationships of Man to the Primates' was a bitter disappointment in his 'struggle for a place and reputation among my fellow anatomists'.<sup>57</sup> His appointment as Conservator of the Royal College of Surgeons would provide him with inheritance of material to utilize in his research and to write also about his famous predecessors.

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53 Arthur Keith, *An Autobiography*, 1950, pp.1-703; Frank Spencer, *Pittdown : a Scientific Forgery*, 1990, p. xxii.

54 Arthur Keith, *An Autobiography*, p. 10.

55 *ibid*, pp. 7-8, 119, 192, 324, 361.

56 *Encyclopaedia Britannica*, 15 edn., 1994, vol. 6, p. 786.

57 Arthur Keith, *An Autobiography*, pp. 232-34.

Since 1800 when the Corporation of Surgeons became the Royal College of Surgeons entrusted with John Hunter's collection of specimens transferred from Leicester Square to Lincoln's Inn Fields, Arthur Keith was its sixth Conservator. William Clift, the first, with the aid of Sir Everard Home (Hunter's brother-in-law and one of his trustees, who had burnt Hunter's private papers and records because he felt Hunter's opinions could not be reconciled with the biblical account of Creation), achieved by 1813, the public viewing of the massive Hunterian Collection, prepared by the famous Scot, John Hunter, founder of pathological anatomy in England. By 1827 Clift was still working on a catalogue of Hunter's 4000 specimens when Richard Owen, a young practising medical surgeon was brought in to assist him. By 1833 Owen achieved publication of the monumental Descriptive and Illustrated Catalogue of the Physiological Series of Comparative Anatomy contained in the Museum.<sup>58</sup>

In 1834 he was elected a Fellow of the Royal Society and in 1836 became Hunterian professor of physiology and anatomy, and additionally at the Royal Institute, the Fullerian professor of comparative anatomy and physiology. He gave up medical practice, devoted himself to research and in 1856 he took up the position of Superintendent of the natural history departments at the British Museum, retiring from there in 1884 when he was knighted. He died in 1892. Although Charles Darwin had been his friend and colleague for twenty years, Owen felt his own pre-eminent position in biology to be threatened from 1859 by Darwin's *Origin of Species*, and strongly opposed it.<sup>59</sup>

Following Owen's departure from the Royal College of Surgeons in 1856, Dr Quekett, a distinguished microbiologist became conservator, though only for a short time until his death in 1861, when William Flower a zoologist then guided the Hunterian Museum as Curator and from 1870 as Hunterian professor of comparative anatomy and physiology. A disciple of Darwin's, Flower exhibited the principles of evolution and in his work made valuable contributions to structural and comparative anatomy of mammals (mainly marsupials, whales and primates) and was the first to show lemurs to be primates. In the course of his anthropological work he made extensive accurate measurements of at least 1300 human skulls. In 1884 he left to

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58 Arthur Keith, *An Autobiography*, pp. 296-97; *Encyclopaedia Britannica*, 1994, vol.6, p. 158.

59 A Keith, *An Autobiography*, pp. 297-98; *Encyclopaedia Britannica*, vol. 9. p. 23.

succeed Richard Owen at the British Museum and was responsible for numerous important scientific texts and papers, was knighted in 1892 and died in 1899.<sup>60</sup>

During the 1860s Thomas Henry Huxley had played a significant role as Hunterian professor of the Royal College of Surgeons, and would be at one time its secretary and at another time, its president. A giant intellect, with Sir Joseph Dalton Hooker and Sir Charles Lyell he would champion Darwin's Theory of Evolution. Remarkably he had little schooling, was mainly self-taught, including languages. At fifteen he became apprentice to a medical practitioner in London's poverty-stricken East End, then gained a scholarship to Charing Cross Hospital Medical School in central London where he distinguished himself as a scholar. Nevertheless lack of funds prevented him gaining his degree and he signed on in the navy as assistant surgeon on the *S. S. Rattlesnake* .

His superb collection and his brilliant documentation of his gathered specimens over four years in the southern seas, saw him elected at the age of twenty-six years, a Fellow of the Royal Society. Though never gaining his medical degree he was invested with honorary doctorates from eight British and overseas universities. Through his abundant seminal texts and papers on subjects of palaeontology, taxonomy, ethnology and philosophy he occupied esteemed positions in numerous scientific societies. He lectured world-wide not only to scientific bodies but to artisans and the public alike in semi-popular form. Few have been as influential internationally as Huxley over an enormous span of scientific development. Over and above his own country's bestowed honours, more than fifty-three scientific honours were showered on him from overseas countries. The word 'agnostic' was coined by him. He was buried at Finchley on 4 July 1895 without religious ceremony. He left his dominant mark on education reform and widely of teacher-training of science including teaching of it also in the Working Man's Club and Institute Union.<sup>61</sup>

With the retirement in 1884 of William Flower at the Royal College of Surgeons, Charles Stewart, Arthur Keith's predecessor, served from 1886 for twenty-one years until his death in 1907. His notable contributions

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60 A. Keith, *An Autobiography*, pp. 298-99; *Encyclopaedia Britannica*, 1994, vol. 4. p. 845.

61 *Encyclopaedia Britannica*, 1994, vol. 6, pp. 178-79.

were on the anatomy of invertebrates and his talent as an artist. From 1908 Arthur Keith produced extensive volumes of scientific papers and books, held high office in numerous scientific organisations, was widely honoured, the FRS (Fellow of the Royal Society) in 1913 and a knighthood in 1921. Of the latter he cast in his diary, 'May 30 - came home from Trebetherick to find a letter from the Prime Minister offering knighthood; all my good resolutions are going to the wind and I'm weakly accepting'. The pomp and ceremony of Council meetings of the Royal College of Surgeons, became one of his delights.<sup>62</sup>

Some of Keith's earlier work on the hands and feet of apes and human babies had brought him to the belief that in humans erect posture was an ancient attribute while a large brain was man's most recent.<sup>63</sup> He would later change his mind on some of these points.

In 1910 Keith espoused controversial ideas about the 1888 Galley Hill skeleton found east of London in the Thames River gravel deposits with crude stone tools accompanied with extinct fauna of the same period, and although considered to be *Homo sapiens*, Keith assessed it to be very ancient, dating it back to what was then considered the beginning of the Pleistocene.<sup>64</sup> In 1912 at the Dundee meeting of the British Association for the Advancement of Science, Keith's change of ideas was evident. His conviction now was that man had remained unchanged for a long time, possessing a large brain which had quickly developed, while later, speech and upright walking were acquired. To him at this stage Neanderthals and Java fossils were degenerate offshoots of mankind<sup>65</sup>. At this 1912 Dundee conference Elliot Smith's views differed greatly from Arthur Keith's. He championed the pedigree of man's ancestors from the Eocene. He outlined how step by step from the lowly insectivore status and through every earlier phase in the evolution of mammals 'the evolution of the primates and the emergence of the distinctively human type of intelligence are to be explained primarily by a steady growth and specialisation of certain parts of the brain'. Erect posture he thought came later with further brain

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62 A. Keith, *An Autobiography*, pp. 298-99, 363, 437, 289-90.

63 John Reader, *Missing Links: The Hunt for Earliest Man*, Little, Brown & Co., Boston, 1981, p. 56.

64 *ibid.*, pp. 4, 57-59.

65 *ibid.*, p. 60.

expansion.<sup>66</sup>

Elliot Smith's renowned research into the evolution of the brain of all species and in particular that of the human brain had secured his position at the zenith of world scientists in this field.<sup>67</sup> Perceptively Charles Darwin had recorded 'in the future I see open fields for far more important researches...Much light will be thrown on the origin of man and his history'.<sup>68</sup> Embryonic ideas of life's baffling secrets, particularly that of man's own kind began to emerge, some to be aborted, some stillborn, others too advanced for their time, became cocooned and in another time released by enquiring minds. From the lead given by Darwin and Wallace, great scientists since have gathered some of those past threads, advanced them and in many cases developed new theories and established more scientific facts. Some among the forefront of achievements relating to human origins from the late 1800s and early 20th century were Grafton Elliot Smith, Arthur Keith and others recently mentioned.

In 1896 on arrival in England on his scholarship to Cambridge, Elliot Smith had first made acquaintance with Arthur Keith. They with W. L. H. Duckworth would enjoy Eugene Dubois's lectures in London and share with him at Cambridge casts of his *Pithecanthropus* (Java Man) he discovered in the 1890s, and engage in healthy debate of it.<sup>69</sup> As did Arthur Keith, Elliot Smith travelled the world lecturing. Known for his consummate, lucid delivery, mostly without notes, Elliot Smith's warm personality drew students, staff and the public alike to him. He was on personal terms with most of the great scientists of his day and teachers of anatomy, the latter in many cases past students of his own.<sup>70</sup> In such a vibrant field of endeavour, nevertheless an intricate web of play pervaded among scientists involving characters and scientific endeavour, causing rancour or agreement. Sometimes friendships were cemented, at other times destroyed.

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66 G. Elliot Smith, Presidential Address, Anthropology Section, 1912 Dundee Meeting of the British Association for the Advancement of Science, autographed copy to 'John Hunter 21.ii. '22, with Kind Regards, G. E. S.', Shellshear Museum, University of Sydney, pp. 16-17, 24.

67 A. P. Elkin and N. W. G. Macintosh (eds), *Grafton Elliot Smith : The Man and His Work*, Sydney University Press, 1974, pp. 1-232.

68 Charles Darwin, *The Origin of Species*, 6th edn., John Murray, 1901, p. 402.

69 A. Keith, *An Autobiography*, 1950, p. 201.

70 A. A. Abbie, 'Annual Post Graduate Oration on Sir Grafton Elliot Smith', reprint from *Bulletin of the Post-Graduate Committee in Medicine*, University of Sydney, vol. 15, no. 3, June 1959, pp. 101-150.



Other than *Pithecanthropus*, another fossil, that of Piltdown man unearthed in pieces from 1908 in Sussex, found many scientists in discord over it. Such was the case with the four experts who would analyse Dart's Taung skull. However, some of their likes or dislikes of each other were to surface before and after the discovery of the Piltdown skull. An instance of this between Arthur Keith and Elliot Smith is seen in a letter by the latter to J. T. Wilson in Sydney, when Elliot Smith was an applicant for the chair at Glasgow. He mentions to Wilson there was no news of Glasgow and, 'Now that Keith is out of the way - installed as Conservator in the Royal College of Surgeons Museum it is generally thought that Bryce will have a good chance at Glasgow'.<sup>71</sup> Arthur Keith in his writings mentions Glasgow chose their own man, 'T. H. Bryce who proved to be a most able embryologist and a skilled anatomist' and that 'Elliot Smith had to wait three more years in Egypt until 1909, when Manchester invited him to fill its Chair of Anatomy'.<sup>72</sup>

Arthur Smith Woodward (fig. 49), (knighted in 1924), the noted vertebrate palaeontologist and Keeper of Geology at the British Museum (Natural History) from 1901-1924 into whose hands those fossil fragments were delivered by Charles Dawson, (the discoverer), (fig. 49), would by his rearticulation of them, begin years of hostile rancour and divisiveness between these four scientists. From the beginning Keith had been jealous that the Piltdown material had not come to his museum. He had 'hoped to maintain the reputation of the Royal College of Surgeons Museum as the proper home for all fossil remains of ancient man'. He considered that while Smith Woodward deserved the highest reputation as a palaeontologist, he maintained that he had no special knowledge of the human body. Keith, however, had other fears it seems for while recognising Woodward's superb background training under the veteran palaeontologist of Manchester, Sir William Boyd Dawkins, he was well aware that both these scientists held in contempt his own belief in the 'antiquity of *Homo sapiens* as an evolutionary heresy'. He found Smith Woodward 'a proud and cold man', and one with whom he found difficulty in engaging his friendship. Keith would reveal that in the early days of the Piltdown discovery Smith Woodward and he 'had been open antagonists - enemies I might almost say'.<sup>73</sup>

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71 University of Sydney Archives, The J. T. Wilson Family Archives, P. 162, series 5, item 2, G. Elliot Smith in Cairo letter to J. T. Wilson, Sydney, 12 Apl. 1908.

72 A Keith, *An Autobiography*, Watts & Co., London, 1950, pp. 261-62.

73 *ibid.*, pp. 324-27, 654.

When Smith Woodward achieved rearticulation of these Piltdown fragments and wrote up his findings, these were challenged by Arthur Keith. (fig. 50). It is said Keith initially had misgivings about the Piltdown Man, particularly its age, but came to accept it as the most important human remains thus found.<sup>74</sup> Nevertheless he opposed Arthur Smith Woodward's reconstruction of the skull fragments and his 1070 cc capacity estimate of its brain case. He criticised it as denying the specimen's brain capacity of between 250-300 cc of cranial capacity. With casts of these fragments supplied to him by Smith Woodward in 1913, Arthur Keith assembled these to realise for their owner a cranial capacity of 1500 cc. He sought support of his ideas from Elliot Smith and others, then outraged them by refuting Smith Woodward's findings before the International Congress of Medicine in London in 1913 and through *The Times* newspaper. Response from Elliot Smith came swiftly as Arthur Keith noted in his diary, 'Elliot Smith poured the vials of wrath on me - through the post'.<sup>75</sup> (fig. 49).

Their discord continued over time in print in *Nature*, (September 1913) and other print outlets and in bitter vocal acrimony at Royal Society and other meetings.<sup>76</sup> From overseas, scientists too proffered varied opinions, particularly regarding the ape-like jaw, as did also local scientists. Wynfrid Laurence Henry Duckworth who had first supported Smith Woodward's assessment of the Piltdown man fossils, now sought information on the precise antiquity of this specimen, though later came down on the side of Arthur Keith's views.<sup>77</sup> Arthur Keith meanwhile was faced with the end of Elliot Smith's friendship and the disdain of the Royal Society.<sup>78</sup> Perhaps the account given by Frank Spencer in his book quoting Alfred Haddon's words of Elliot Smith registered in a paper in 1916 by G. G. MacCurdy, succinctly illustrates Elliot Smith's opinion of Keith then, and why and how their friendship was finally tested:

I had to speak straight because so many British anatomists have been content to dance to Keith's rag-time, without attempting to

74 John Reader, *Missing Links: The Hunt for Earliest Man*, 1981, p. 65.

75 A. Keith, *An Autobiography*, 1950, pp. 325-26; J. Reader, *Missing Links: The Hunt for Earliest Man*, p. 65.

76 A Keith, 'The Piltdown skull and brain cast', *Nature*, vol. 92, 1913, pp. 107-09, 197-99, 292, 345-46; G. E. Smith, *Nature*, vol. 92, 1913, pp. 267-68, 318-19; G. E. Smith, 'The Controversies concerning the interpretation and meaning of the remains of the Dawn Man found near Piltdown', *Nature*, vol 92, 1913, pp. 468-69.

77 Frank Spencer, *Piltdown; A Scientific Forgery*, Oxford University Press, 1990, pp. 54, 67.

78 A. Keith, *An Autobiography*, pp. 326-27.

think for themselves; and foreign anthropologists think therefore that all the anatomists are supporting him...For years I have stood up for Keith, at times at the peril of my own reputation [and] sanity, in the hope of restraining him from too wild excesses.<sup>79</sup>

Within a few more years further tension arose between Duckworth, Keith and Smith, though on this occasion over the filling of the Chair of Anatomy at Cambridge University. This chair had become vacant on the death of the renowned anatomist Sir Alexander Macalister in 1916, in which year also died the doyen of British anatomists, Sir William Turner. Duckworth, a one time pupil of Macalister's and later his lecturer in anatomy for some years under him at Cambridge, now became aspirant to this chair.<sup>80</sup> It is interesting to note Elliot Smith's opinion of applicant Duckworth in this regard revealed in a letter at the time to his old mentor James T. Wilson, 'It would be a catastrophe to put Duckworth into the chair'. While Duckworth was an eminent palaeontologist and physical anthropologist, Elliot Smith considered the chair should be filled by a comparative anatomist.<sup>81</sup> He would urge Wilson himself to apply. Both Elliot Smith and Arthur Keith were on the selection panel for this position. Keith, who had been greatly drawn towards Duckworth not only for his fine outlook on life but also for his scientific papers and texts, reveals that he had to let his head rule over his heart in not selecting him for the position. James T. Wilson in 1920 would be ensconced in this chair, from which time the friendship of both Arthur Keith and Elliot Smith would ever be lost to Wynfrid Duckworth.<sup>82</sup>

In the years to 1925, the year these four scientists became adjudicators of Raymond Dart's fossil skull from Taung, all had achieved considerable scientific standing. By now Arthur Keith had become overwhelmed by the Piltdown discovery and possessed of a strong desire to write a book specifically on it, though decided to expand one to cover all the important discoveries to date of historic man. Nevertheless in doing so he gave most emphasis in it to Piltdown man. It would seem he was determined to make his views on this specimen as widely known as possible and achieved this in his first volume of 1915, *The Antiquity of Man* and in its second edition of

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79 Frank Spencer, *Piltdown: A Scientific Forgery*, 1990, p. 75, quoting from G. G. MacCurdy's 1916 paper, 'The Revision of *Eoanthropus dawsoni*, *Science*, vol. 43 pp. 228-31.

80 A. Keith, *An Autobiography*, 1950, pp. 391-92.

81 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 2, G. Elliot Smith, University College, London letter to J. T. Wilson, University of Sydney, 15 Sept. 1919.

82 A. Keith, *An Autobiography*, pp. 391-92.

early 1925, which was published just before the release of Dart's paper in *Nature* on the Taung skull.<sup>83</sup> Elliot Smith was openly critical in the press on Keith's writing and his failure to seize the great opportunity to revise in 1925 his first edition of his 1915 book, *The Antiquity of Man*. He wrote, he missed 'the chance of transforming his book into a treatise one might have put into the hands of students as a reliable guide written by a competent master'.<sup>84</sup> Elliot Smith had produced in 1924 a small volume on evolution concerning man and a year before Dart's paper on the Taung skull. Both Arthur Keith and Elliot Smith in their books highlighted the Piltdown man fossil as the most important discovery ever made in human descent and particularly emphasised the criterion of humans possessing a large brain foremost before the development of other faculties, such as upright walking.<sup>85</sup> Now in the face of Piltdown and *Pithecanthropus* (Java man) came this new contender in the fabric of human emergence as analysed by Raymond Dart. Would it challenge, perhaps even displace these forms? Might it even negate these scientists' convictions of the evolutionary path of man; might even their scientific prestige be at stake? The question which now loomed for Dart was how would these world authorities adjudge his assessments of the Taung skull? What might also be the opinion of Dr W. L. H. Duckworth, Cambridge anatomist and physical anthropologist, author of *Anthropology and Morphology*, whose text Dart had used during his dissection? Moreover, Sir Arthur Smith Woodward, the noted vertebrate palaeontologist and Keeper of Geology at the British Museum (Natural History), how might he analyse Dart's preliminary paper on this unique Taung child?<sup>86</sup> (fig. 49).

Having read Keith's first disparaging article on his Taung skull in the *British Medical Journal* of 14 February 1925,<sup>87</sup> Dart was not surprised to read Keith's article in *Nature* of the same date presented similar content.<sup>88</sup>

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83 A. Keith, *The Antiquity of Man*, Norgate & Williams, London, 1915, and 2nd edn., Watts & Co., London, 2 vols., 1925.

84 Grafton Elliot Smith, 'Fossil Men and Apes', *The Nation*, 4 Apr. 1925.

85 G. Elliot Smith, *The Evolution of Man Essays*, Oxford University Press, 1924, pp. 65-67; Arthur Keith, *The Antiquity of Man*, Norgate & Williams, 1915, also 2nd edn. Watts & Co., London, 1925.

86 Frank Spencer, *Piltdown: A Scientific Forgery: Based on Research by Ian Langham (1942-1984)*, Oxford University Press, 1990, pp. xxi-xxvi; R. A. Dart, 'Australopithecus africanus: The Man-Ape of South Africa', *Nature*, vol. 115, no. 2884, 7 Feb. 1925, pp. 195-99.

87 Arthur Keith, 'The New Missing Link', the *British Medical Journal*, 14 Feb. 1925. p. 325.

88 Arthur Keith, 'The Fossil Anthropoid Ape from Taungs', *Nature*, vol. 115, no. 2885, 14 Feb. p. 234. Note; in this and other articles of this time in *Nature*, the word *Australopithecus* is not italicized.

Analysing this article, it becomes obvious that Keith adopted a stand of hedging his bets either way. He was certain the brain was not human but anthropoid. In this area he does not concede any advance in brain expansion which Dart had specifically pointed out. He noted various brain capacities and cranial dimensions of the human, gorilla and chimpanzee, calculating the infant *Australopithecus* as possessing a brain capacity of less than 450 cc and the adult of its kind to be not in excess of 520 cc. However, he was seemingly somewhat persuaded as to the shape of Dart's specimen, advising, 'Even if it be admitted, however, that *Australopithecus* is an anthropoid ape, it is a very remarkable one. It is a true long-headed or dolichocephalic anthropoid—the first so far known'.<sup>89</sup>

These facts were made patently clear by Dart in his paper, and in which he also estimated the adult brain would be about the size of that of a gorilla. By cranial measurements Dart had estimated his infant specimen had a brain larger than a chimpanzee and clearly noted:

Whatever the total dimensions of the adult brain may have been, there are not lacking evidences that the brain in this group of fossil forms was distinctive in type and was an instrument of greater intelligence than that of living anthropoids.<sup>90</sup>

In revealing further uncertainty Keith continued to hedge his bets:

It may be that *Australopithecus* does turn out to be 'intermediate between living anthropoids and man', but on the evidence now produced one is inclined to place *Australopithecus* in the same group or sub-family as the chimpanzee and gorilla. It is an allied genus. It seems to be near akin to both.<sup>91</sup>

Keith agreed the specimen seemed to differ from them both in the shape of the head and brain and in a tendency to retention of infantile characters. However he concluded that he would not be converted until Professor Dart produced more evidence and he doubted the advisability of creating a new family for the reception of this new form. He called for geological evidence to help settle its relationships.<sup>92</sup>

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89 *ibid.*

90 Raymond A. Dart, '*Australopithecus africanus* : The Man-Ape of South Africa', *Nature*, vol. 115, no. 2884, 7 Feb. 1925, pp. 195-99.

91 Arthur Keith, 'The Fossil Anthropoid Ape from Taung's', *Nature*, vol. 115, no. 2885, 14 Feb. 1925, p. 234-35.

92 *ibid.*

Another expert, Profesor Grafton Elliot Smith, Dart's former mentor, also registered two articles published that day, one in *The Illustrated London News*, the other in *Nature*, both on 14 February 1925. Though he did not agree with many of Dart's points on *Australopithecus*, he certainly gained the maximum publicity for his protégé and his discovery in that select newspaper, *The Illustrated London News*. He even engaged the artist Forestier, to provide some drawings of the new specimen. Full front-page coverage carried Forestier's masterpiece of Dart's Taung skull specimen, featuring its head and shoulders, appropriately now modelled with a clothing of flesh and hair. A touch of the artist's wit gave Dart's child a wry smile by its upward-curving lips. The next three pages carried Elliot Smith's lengthy popular article, also a novel guess at a new human family tree.<sup>93</sup> Additionally featured over a full page was the artist's striking and exciting conception of the diminutive *Australopithecus* figure viewing the massive figure of Rhodesian man across a wide, deep chasm, symbolising in time, an aeon of over one million years or so.<sup>94</sup>

Elliot Smith's pride in his protégé is further observed in his furnishing of his own photo (fig. 35) for the same issue of *The Illustrated London News* for its most prestigious page, 'Personalities of the Week : People in the Public Eye'. On this page Professor Raymond A. Dart and Professor Joseph L. Shellshear, DSO (Distinguished Service Order) were featured together with their credentials (Dart because of his latest discovery). They took centre place surrounded by photos of other prominent personalities, including Kings, Maharajas and Lords.<sup>95</sup> Such powerful publicity while gratifying Dart enormously, failed to remove the sting of Elliot Smith's firm disagreement with most of his claims:

Whatever interpretation future investigation will assign to the fossil remains of an anthropoid ape just brought to light at Taungs in Bechuanaland, there can be no question as to the exceptional interest and importance of the discovery, and of the greatness of Professor Raymond A. Dart's achievement, which is a fitting reward

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- 93 Grafton Elliot Smith, 'The Fossil Anthropoid from Taungs', *Nature*, vol. 115, no. 2885, 14 Feb. 1925, p. 235; '*Australopithecus*, the Man-like Ape From Bechuanaland: A Great Discovery Throwing New Light on Human Ancestry', *The Illustrated London News*, 14 Feb. 1925, p. 240.
- 94 Grafton Elliot Smith, '*Australopithecus*, the Man-like Ape from Bechuanaland: A Great Discovery Throwing New Light on Human Ancestry', *The Illustrated London News*, 14 Feb. 1925, p.239.
- 95 *The Illustrated London News*, 'Personalities of the Week: People in the Public Eye', 14 Feb. 1925, p. 260.

for his enthusiastic efforts to promote the study of human palaeontology and anthropology in South Africa. It was a happy circumstance that such a specimen fell into his hands, because he is one of the, at most, three or four men in the world who have had experience of investigating such material and appreciating its real meaning.<sup>96</sup>

Dart, naturally, found himself infinitely grateful for this tribute, but he at once recognised that Elliot Smith entertained little acceptance of his claims. This scientist saw no reason for Dart's creation of a new family for his specimen; he believed that it belonged to the *Simiidae* - which then included the gorilla, chimpanzee, orang and gibbon and advised that the only fossil representing this family in Africa was a jaw found in the Fayüm of Egypt. He found Dart's specimen remarkable for its completeness and place of extraction. Agreeing the teeth showed it to be an infant and noting other general factors outlined by Dart, Elliot Smith further commented, 'all suggest the inference that this unmistakable ape reveals an early stage in the refinement that eventually led ages later to the attainment of human status'.<sup>97</sup>

However, commenting on the brain, on which he was a world authority, Elliot Smith cautioned, 'The fact that the brain had not attained proportions clearly differentiating it from that of the gorilla or chimpanzee emphasises the need for caution in claiming the nearer kinship of *Australopithecus* to the human family'.<sup>98</sup> Further, Elliot Smith, as had Sir Arthur Keith, now hedged his bets and became even more ambivalent:

If Professor Dart is right—and I think he is—in saying that it shows a greater resemblance to man than any other ape, this statement must be qualified by the explanation that the step in advance had not carried *Australopithecus* far beyond the status of the gorilla.

But if the progress in the direction of the human family is only slight, it is very important because (a) it is not partial, but affects so

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96 G. Elliot Smith, *The Illustrated London News*, 14 Feb. 1925, p. 240. Note: P. V. Tobias in *Dart, Taung and the 'Missing Link'*, pp. 18-20 gives a full account of the several geographical location changes positioning Taung and states it now lies in the African 'homeland' of Bophuthatswana; Dart with Craig, *Adventures with the Missing Link*, p. 11; G. Elliot Smith, *The Illustrated London News*, 14 Feb. 1925, p. 240.

97 G. Elliot Smith, *The Illustrated London News*, 14 Feb. 1925, p. 240; *Encyclopaedia Britannica*, 15 edn., 1994, vol. 1, p. 478, now list classifications as follows: gibbon and siamang in Family Hylobatidae; chimpanzee, bonobo, orangutang and gorilla in Family Pongidae

98 G. Elliot Smith, *The Illustrated London News*, 14 Feb. 1925, p. 240.

many details of the face and skull, and (b) it involves the brain, which obviously is the real criterion of any advance towards the intellectual supremacy of the human family.<sup>99</sup>

It is evident that those points were implicitly Dart's contention. In regard to the brain size of Dart's infant, Elliot Smith agreed with Dart it would have been almost as big as the largest adult gorilla's. His estimate for the adult *Australopithecus* brain at 650 cc or even 700 cc was much higher than Sir Arthur Keith's of 520 cc. That the adult brain capacity of the Taung specimen would be within 250 cc of the brain capacity of *Pithecanthropus* (Java man) whose capacity was 900 cc, impressed Elliot Smith, as this was the most primitive human fossil discovered to that stage.<sup>100</sup>

Elliot Smith remarked on the attention Dart had drawn to certain features being more significant than mere bulk of the brain as indicators of cerebral progress. He pointed out, 'but we can confidently accept his statement (graphically expressed in his diagram) that the lunate sulcus is much more widely separated from the parallel than is the case in the other apes'.<sup>101</sup> That must have heartened Dart immensely as would have additionally Elliot Smith's use of diagrams to indicate regions of brain expansion and their importance to matters of skill, movement, mental concentration and auditory advance as a definite development of intelligence. Most pleasing also to Dart would have been the use by Elliot Smith of Dart's own drawings and photographs (fig. 51), which were featured so convincingly on one large full page of this issue of *The Illustrated London News*.<sup>102</sup>

However, in his article in the more important journal, *Nature*, and while congratulating Dart on his energy and insight in recording his discovery, Elliot Smith still withheld acceptance of the status Dart had claimed for his primordial, petrified *Australopithecus*. Instead he called for further investigation and subsequent information. A further criticism of Dart was that he had not developed the specimen sufficiently to expose the crowns of the teeth. Elliot Smith contended in this regard that until critical comparisons were made with the two known extinct anthropoid fossils thought then to approach nearest the line of man's ancestry, (referring to the

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99 *ibid.*

100 *ibid.*

101 *ibid.*

102 *ibid.*, p. 241.



Egyptian and Indian ape fossils),<sup>103</sup> 'It would be rash to push the claim in support of the South African anthropoid's nearer kinship with man.'<sup>104</sup>

Unexpectedly and once more on the positive side Elliot Smith admitted that he stood prepared to agree with Dart that he was probably justified in creating a new species and even a new genus for his interesting fossil. In this regard he disagreed with Sir Arthur Keith. Elliot Smith pointed out, 'for if such wide divergences between the newly discovered anthropoid and the living African anthropoids are recognisable in an infant, probably not more than four years of age, the differences in the adults would surely be of a magnitude to warrant the institution of a generic distinction'.<sup>105</sup>

From Dart's diagram showing the brain imprint, Elliot Smith found the most suggestive features to be the position of the sulcus lunatus and the extent of the parietal expansion that had pushed asunder the lunate and parallel sulci. This, Elliot Smith assessed as a 'very characteristic human feature'. He agreed some features possibly justified the claim that *Australopithecus* had really advanced a stage further on the way to human status than any other ape. Cautiously, however, he called for fuller information and more photographs to reveal details, otherwise he would not justify drawing any final conclusions as to the significance of the evidence. When this was provided he said he would then 'be quite prepared to admit that an ape has been found the brain of which points the way to the emergence of the distinctive brain and mind of mankind'. He called for more geological evidence of age, and the exact conditions under which the fossil had been found, also the exact form of the teeth.<sup>106</sup>

The third expert, Sir Arthur Smith Woodward of the Natural History Museum, set forth his view on Dart's paper in *Nature* of 14 February 1925. In opening he congratulated Dart on his lucid and suggestive preliminary description of the new Taung fossil of an 'extinct anthropoid ape' and the first so far discovered of its type. Asserting that he found serious defects in the material, his short assessment was both condemnatory and dismissive:

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103 G. H. R. von Koenigswald, *Meeting Prehistoric Man*, Thames & Hudson, London, 1956, pp. 28, 144-45, states Fayûm remains the oldest, discovered in 1910 by Herr Markgraf, specimens now in Wûrtemberg Natural History Museum, Stuttgart; *Dryopithecus* found in France 1856 and 1898 in Swabian Alps, Germany; G. E. Smith, *Nature*, vol. 115, no. 2885, 14 Feb. 1925, p. 235.

104 G. Elliot Smith, *Nature*, vol. 115, no. 2885, 14 Feb. p. 235.

105 *ibid.*

106. *ibid.*

I see nothing in the orbits, nasal bones, and canine teeth definitely nearer to the human condition than the corresponding parts of the skull of a modern young chimpanzee.<sup>107</sup>

Of concern to Smith Woodward was the absence of bones of the braincase which he thought prevented determination of the amount of its distortion. In this respect he needed more information as to the reality of the skull-shape. He required also fossils from India with which to compare the teeth. Until then, he advised that he could not express an opinion as to whether the direct ancestors of man would be sought in Asia or in Africa. Reluctantly he considered the new fossil from South Africa 'certainly has little bearing on the question'. In conclusion he rebuked its naming:

Palaeontologists will await with interest Prof. Dart's detailed account of the new anthropoid, but cannot fail to regret that he has chosen for it so barbarous (Latin-Greek) a name as *Australopithecus*.<sup>108</sup>

Smith Woodward would not be the only one to raise this last point. Several etymologists would shortly join in foray and air their abstruse knowledge to determine the name *Australopithecus*, as 'an unpleasing hybrid as well as etymologically incorrect',<sup>109</sup> and launch their reasons why. A note in the *Medical Journal of South Africa*, labelled it, "that atrocious name",<sup>110</sup> while F. A. Bather of the British Museum recorded his banter, "if you want to join in the game, you must learn the rules", then reminded Dart of his offences on this issue.<sup>111</sup>

The author of 'Current Topics and Events' in *Nature* of 28 March, noted that criticism of Dart's name for his specimen continued, and that in a cable which appeared in *The Times* of 11 March, 'Prof. Dart defends himself with some humour but in a manner which suggests that the niceties of etymology do not greatly appeal to him'.<sup>112</sup>

The fourth expert writing for *Nature* on 14 February 1925 concerning Dart's discovery, Dr W. L. H. Duckworth of Cambridge, seemed less

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107 Arthur Smith Woodward, 'The Fossil Anthropoid Ape from Taungs', *Nature*, vol. 115, no. 2885, 14 Feb. 1925, p. 235.

108 *ibid.*, pp. 235-36.

109 'Current Topics and Events', *Nature*, vol. 115, no. 2891, 28 Mar. 1925, p. 469.

110 P. V. Tobias, *Dart, Taung and the 'Missing Link'*, p. 41, quoting from the *Medical Journal of South Africa*, 20 Apr. 1925.

111 *ibid.*, quoting F. A. Bather, *Nature*, vol. 115, p. 947.

112 'Current Topics and Events', *Nature*, vol. 115, no. 2891, 28 Mar. 1925, p. 469. Note: the title, *Nature*, is not italicized in this article.

condemnatory. Dart, in fact, thought he was more favourable. He found Dart's specimen of exceptional interest and importance and suggested that should his claims prove good, his discovery would rank in importance with those of *Pithecanthropus*, Mauer (Heidelberg man) and Piltdown man. He had confidence in the thorough scrutiny Dart had subjected to his specimen. He considered the important fact was its history from time of extraction from the limestone. However, he queried the status of the specimen and the problem which arose from its discovery in South Africa.<sup>113</sup> This latter factor proved an enigma not only to Duckworth, but to most scientists at that time who had determined in their agenda that mankind's origins would be found in Asia. Nevertheless, Dr Duckworth continued to be generous in his summing up - determining that if Dart succeeded in justifying his claims of status for the new ape-form, this should be conceded. In addition to cerebral features, Duckworth noted several other points as worthwhile in citing, 'the level of the lower border of the nasal bones in relation to the lower orbital margins, the (small) length of the nasal bones, the lack of brow-ridges (even though the first permanent tooth has appeared fully), the steeply rising forehead, and the relatively short canine teeth'.<sup>114</sup>

Dr Duckworth felt that some of the characters mentioned were related preponderantly to the youthfulness of the specimen and said, 'If, however, the good points can be justified, then these characters of youth will not gravely affect the final decision'. He did however, consider its form resembled the gorilla rather than the chimpanzee and similarly as others had, called for geological evidence and comparison with fossil forms of apes from India.<sup>115</sup>

All four experts raised differing objections against Dart's specimen. It is possible there may have been some discussion between them. Dart wrote that he suspected that the leading anthropologists were 'ganging up' on him.<sup>116</sup> Was he right? As shown above these scientists were earlier in stark disagreement over aspects of the Piltdown skull. Now they are seen as mostly negative about Dart's South African Taung fossil.<sup>117</sup> Though

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113 W. L. H. Duckworth, *Nature*, vol. 115, no. 2885, 14 Feb., 1925, p. 236.

114. *ibid.*

115 *ibid.*

116 Dart with Craig, *Adventures with the Missing Link*, p. 42.

117 Arthur Keith, *An Autobiography*, Watts & Co., London, 1950, pp. 323-29; Grafton Elliot Smith, *The Evolution of Man Essays*, Oxford University Press, London, 1924, pp. 68-69.

disconsolate over the opinions of the British establishment, Professor Dart nevertheless decided that he had no time for brooding.<sup>118</sup> First of all and much to his surprise, the University of the Witwatersrand, was thoroughly enjoying the publicity and even the current notoriety it was receiving as a result of his discovery. It honoured him with the appointment of Dean of the Faculty of Medicine, which at the same time added considerably to his responsibilities as Professor of Anatomy. There were countless committee meetings, particularly those for the forthcoming South African Association for the Advancement of Science for which by his colleagues he had been elected the president of the Anthropological section, an honour he proudly accepted. These activities and his extra research on the Taung skull and other enquiries helped him contain his deep disappointment of rebuttal by the British establishment of his Taung paper.<sup>119</sup> This period was not easy for Dart. His wife, Dora, fell ill about this time. Currently as a student at Wits working towards her Bachelor of Medicine and Bachelor of Surgery degrees, Dora had been forced to go into hospital to have her tonsils removed after severe quinsy. An abscess in the area added to her suffering.<sup>120</sup> As she convalesced, controversy against Dart exploded in the press, leaving the couple in shock, battling for self-possession.

In those times religious intolerance to anything other than the Creation story was strong. Even some of Dart's devout Baptist relatives in Australia were so horrified by his discovery and his writings of man's antecedents that one family branch ex-communicated itself from his own immediate family members.<sup>121</sup> Also in those times anything unusual took the fancy of the cartoonists, song writers and playwrights. In Australia radio stations ran a serial for youngsters of the professor and his missing link in Africa.<sup>122</sup> In England newspapers had launched publicity over the latest ideas of human origins as inspired by the Taungs skull's story, some serious, some in jest. Competitions were held for poems about *Australopithecus*; jokes and limericks flowed: ditties were sung in the music halls. *The Spectator* called for an epitaph for the Taung skull, and quoted two amusing entries. Humbert Wolfe's offering struck Dart as prophetic:

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118 Dart with Craig, *Adventures with the Missing Link*, p. 42.

119 Dart with Craig, pp. 44, 51; University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 4, correspondence 1925-1927, R. A. Dart Johannesburg letter to J. T. Wilson, Cambridge, 22 Apl. 1925.

120 *ibid.*

121 Anne Seto, A Dart relative interviewed by F. Wheelhouse in Brisbane, May 1995.

122 F. Wheelhouse recalls this serial on a Sydney radio station in the 1930s.

Here lies a man, who was an ape.  
 Nature, grown weary of his shape,  
 Conceived and carried out the plan  
 By which the ape is now the man.<sup>123</sup>

Mr G. Rostrevor Hamilton's entry won first prize:

Speechless with half-human leer,  
 Lies a hidden monster here:  
 Yet here, read backwards, beauty lies,  
 And here the wisdom of the wise.<sup>124</sup>

Dart himself became inundated with letters and cables from local and overseas sources; from religious and other cranks, the majority somewhat scathing. One warned he was "sitting on the brink of the eternal abyss of flame". Another predicted that he would later "roast in the general fires of Hell." Still another predicted that his punishment would be "being unblessed with a family which looks like this hideous monster with the hideous name".<sup>125</sup>

The word 'Taungs' had inexorably entered the vocabulary. One letter written by a woman to the *Sunday Times* was headed "Hammer and Taungs", whereafter the writer raved on as to why Professor Dart "with such a wonderful gift of God-given genius—become a traitor to your Creator by making yourself the active agent of Satan and his ready tool?". In a succeeding paragraph Dart became one of the Devil's best agents, and the writer challenged, "Why not change over? What will evolution do for you when dissolution overtakes you? Yours respectfully, A Plain but Sane Woman".<sup>126</sup>

The word 'Taungs' even entered the legislature of South Africa when the Member for Umvoti referred scathingly to one of his opponents as 'the honorable member for Taungs—'. A New York cable citing Taungs, reminded that the legislature in the state of Tennessee had signed into law its 'Anti-Evolution' Bill forbidding the teaching of evolution. The Biblical story of creation became mandatory.<sup>127</sup>

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123 Dart with Craig, *Adventures with the Missing Link*, p. 38.

124 *ibid.*, p. 39, quoting from *The Spectator*.

125 Dart with Craig, p. 40.

126 *ibid.*, p. 40, quoting from the *Sunday Times*.

127 Dart with Craig, *Adventures with the Missing Link*, p. 40, quoting from a New York message.

This period was difficult for Dart. Yet on the positive side Dart was first to advise that friends and strangers alike telephoned and wrote to him in commending words of his discovery, many coming to see him and his Taung skull, all pleading for lectures and enlightenment. Numerous people in Europe and the United States sought plaster casts of *Australopithecus*.<sup>128</sup> But a local letter probably cheered Dart as no other expression had done since the ordeal of rejection had begun. Dated 24 March 1925 and signed by Sir William Thomson, the Principal of the University of the Witwatersrand, the letter declared:

I beg to inform you that, at its meeting held on the 20th instant, the Council unanimously passed the following resolution—"That the Council convey to Professor Dart its congratulations on the valuable services rendered by him to science with the discovery of the Taungs skull and on the distinction which has thereby been conferred on the University."<sup>129</sup>

For Dart, this honour and that of his recent election as Dean of the Faculty of Medicine showed to him his complete acceptance by both the senior members of the medical faculty and the Senate.<sup>130</sup> It was to stand in strong and supportive contrast to the situation in certain areas overseas where ridicule of him was to continue, off and on, for years to come. Notwithstanding Dart remained unwavering in his convictions on *Australopithecus* despite this and the many questions of him and his work. Why, the British medical establishment repeatedly enquired, had Dart undertaken the assessment of his discovery entirely alone? Why had he not conferred with London and, together, appraised the skull according to a scholarly schedule? Why had Dart not given a year or more to a thorough examination of his fossil and answer all those salient questions?<sup>131</sup>

But girded by Wit's new attitude, and in retrospect of the immediate past his sense of humour restored, Dart faced the future with the resolve to accomplish all—and more—the new job demanded and, whatever eventuated, remain undaunted before the unexpected in human reaction.

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128 Dart with Craig, *Adventures with the Missing Link*, pp. 40-41.

129 *ibid.*, p. 41, quoting the Principal's letter.

130 Dart with Craig, *Adventures with the Missing Link*, p. 44.

131 R. Broom, *Finding the Missing Link*, Watts & Co., London, 1950, pp. 23-27.

## CHAPTER 6

### A SINGULAR ALLY : NEW DIRECTIONS

Would further support for the Taung skull eventuate, or would further criticism of it prevail? In the face of his adversaries would Raymond Dart stand firm against the British establishment to produce more evidence of the significance of his unique discovery? In addition to Dr Robert Broom and some colleagues, Dart found an ally in Professor James Wilson, yet not mentioning him then or later as perhaps he chose not to implicate him, positioned as he was, as scientific father to both Grafton Elliot Smith and himself. Wilson kept in touch with Dart by letter.

Dart's immediate response to one such communication in early 1925, written a short time after most British scientists had declared themselves in opposition to his claims for the Taung skull, reveals not only Dart's continued fondness and deep respect for Wilson, but also his appreciation of his former counsellor's support. Dart addressed his reply:

My Dear Master,

It has given me more pleasure than you can well know to receive this letter from you today. To learn that I have done something which has earned your commendation is an experience very dear to me. Both the development of the fossil and the writing of my preliminary account proceeded under a series of handicaps whose nature I shall not attempt to describe to one who has so deeply experienced similar conditions. It could hardly be that my conclusions, based on the shreds of comparative material which my tiny library and small Museum afford, should all turn out to be correct. At the same time, I strove, in the brief time I had, to be as cautious as I could be and I am hoping that fuller investigation will not prove me to have been greatly erring.<sup>1</sup>

Sadly Wilson's letter also referred to the untimely death three months earlier of Professor John Hunter. Hunter, twenty-six, holding the Challis Chair of Anatomy at the University of Sydney for two years, had come to London to give more lectures after a whirlwind tour of America. While travelling he had contracted typhoid. His last lecture was given on 5 December 1924 in the Cambridge Anatomy Department for his earlier master, "Jummie" Wilson. Stricken ill immediately afterwards and needing

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1 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 4, R. A. Dart, Johannesburg, letter to J. T. Wilson, Cambridge, 22 Apl. 1925.

hospitalisation, his remaining three lectures programmed for the University College, London for Grafton Elliot Smith, had to be cancelled. He would never give them—death claimed him in five days on 10 December 1924. From fragmentary notes and remembered conversations Elliot Smith respectfully collated these lectures for publication in the *British Medical Journal* in several instalments. By a strange coincidence the second instalment appeared on the day Dart's Taung paper appeared in *Nature*, 7 February 1925.<sup>2</sup> Recalling his own happy times with Hunter at the University of Sydney in his student days and more recently enjoying with him in 1921-22 fulfilling research activities in the University College, London, Dart now shared loss of him with Wilson. He wrote, 'Hunter's death has been a great blow indeed and I can well understand your feelings and sympathise with the loss to Sydney and to Science. Our old School will however produce his like and the Department which you reared will stand and maintain itself despite any man'. Covering other matters in his letter he signed it, 'Your devoted pupil, Dart'.<sup>3</sup>

Wilson's obituary of John Hunter in the *Journal of Anatomy* which said in part, "He has left behind him a memory and an inspiration of priceless value to his University and to Australia", evoked requests worldwide for photos and information of this young genius.<sup>4</sup> Grafton Elliot Smith wrote to Sir Arthur Keith, "...to me Hunter was the biggest man I have ever met".<sup>5</sup> Sir Charles Bickerton Blackburn, later Chancellor of the University of Sydney, would reflect, 'In the memory of John Irvine Hunter whose genius in a most precocious way erupted like a brilliant meteor and illuminated the whole field of anatomy throughout the world and while all were breathlessly awaiting further portents meteor-like passed on'.<sup>6</sup> Elliot

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- 2 P. V. Tobias, 'The John Irvine Hunter Memorial Lecture for 1992: The Piltdown Hoax and Human Evolution: New Light on the Impact of Sir Arthur Keith, Ian Langham, Raymond Dart and *Australopithecus*', Department of Anatomy, University of Sydney, 1992, p. 9.
  - 3 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 4, R. A. Dart, Johannesburg, letter to J. T. Wilson, Cambridge, 22 Apl. 1925.
  - 4 P. V. Tobias, 'The John Irvine Hunter Memorial Lecture for 1992', p. 8, quoting J. T. Wilson, 'In Memoriam John Irvine Hunter, M. D.', *Journal of Anatomy*, vol. 59, 1925, pp. 340-44; University of Sydney Archives, The J. T. Wilson Family Archives, Arthur Keith letter to J. T. Wilson, 26 Feb. 1925.
  - 5 P. V. Tobias, 'The John Irvine Hunter Memorial Lecture for 1992', p.7, quoting G. Elliot Smith to Sir Arthur Keith in W. R. Dawson, *Sir Grafton Elliot Smith*, Jonathon Cape, London, 1938, p. 87.
  - 6 Shellshear Museum Archives, University of Sydney, R. A. Dart, 'Inaugural John Irvine Hunter Memorial Oration, University of Sydney, 31 Jan. 1950, typescript unpubl. Introduction by The Chancellor, Sir Charles Bickerton Blackburn.



Smith whose affection for Hunter was said to be that of a father to a son, would further endorse, "The death of the youthful professor of anatomy in the University of Sydney has inflicted upon medical science a loss, the gravity of which it would be difficult to exaggerate".<sup>7</sup> From Sir Arthur Keith these words, "The students of the University of Sydney lose a born teacher and a leader who had gained a place in their hearts. Nor is it too much to say that British science has lost a recruit who carried a marshal's baton in his knapsack."<sup>8</sup> The Dean of the Medical Faculty at the University of Sydney spoke in similar vein. "...the University of Sydney has lost her most gifted son, science one of her most brilliant votaries and investigators..."<sup>9</sup>

Who then might replace Hunter at the University of Sydney? Both James Wilson and Elliot Smith offered their support of Professor Davidson Black in Peking for this Chair. Davidson Black wrote his thanks to his peers for recommending him for this position, though in declining their offer felt he 'could do a more constructive piece of work by remaining here in Asia than I could hope to do in Australia'.<sup>10</sup> It had been much in the minds too of those in the Anatomy Department in Sydney as to who would replace Hunter. Louis Schaeffer, Wilson's highly respected senior technician while in Sydney and then John Hunter's, would write his suggestions to Wilson as to who might fill Hunter's shoes, doing so on the day of the funeral reports, 'of that beloved and wonderful man John Hunter'.<sup>11</sup> Schaeffer wrote, 'For anatomy another Australian I have in mind is Professor Dart. You would have good knowledge of his expansion, which I take it must be considerable since he was chosen to go to Africa'.<sup>12</sup> No record can be found that Dart was in fact asked. However, as Dart was so fully occupied with his new department in Johannesburg and releasing his unique Taung skull from its matrix and preparing his paper for *Nature* on it, no doubt at that time he would not have contemplated the idea of a move. The search was over by 1927 when the position at the Sydney University was filled by a colleague of

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7 P. V. Tobias, 'The John Irvine Hunter Memorial Lecture for 1992', p. 8, quoting G. Elliot Smith, 'Obituary. John Irvine Hunter, M.D.', the *British Medical Journal*, (1924 a), 2, pp. 1881-83.

8 *ibid.*, quoting Sir Arthur Keith, 'Obituary. Professor J. I. Hunter', *Nature*, vol. 114, 1924, pp. 902-03.

9 *ibid.*, quoting A. E. Mills, (1924-25) 'Memorial Ceremony : John Irvine Hunter', the *Medical Journal of Australia*, 20 Dec. 1924 and 10 Jan. 1925.

10 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 4, Davidson Black, Peking, letter to J. T. Wilson, Cambridge, 28 July 1925.

11 *ibid.*, P 162, series 5, item 3, Louis Schaeffer letter to J. T. Wilson, 14 Dec. 1924.

12 *ibid.*

Dart's, A. N. Burkitt, who shortly afterwards wrote to Dart congratulating him on his discovery. Dart in turn responded congratulating Burkitt on his appointment to the Chair of anatomy.<sup>13</sup>

Later Dart recalled his last work with Hunter on the brain collection of the Royal College of Surgeons and their neurological work with Nicolas Kultchitsky. He regretted that he never was able to ascertain if Hunter ever saw his finished lengthy neurological publication in an American journal on the double innervation of the mesodermal muscle which appeared in the year of Hunter's death.<sup>14</sup>

For Raymond Dart, however, life was to continue year after year and in an even livelier and most contentious fashion, challenging his wits and patience, his own star fixed and burning the brighter as ridicule for his Taung child and himself thrashed about him and, seemingly without demur, he assumed his responsibilities as Dean of the Faculty of Medicine, meeting its challenges head on.

True to his pledge to Dart, Broom had provided in an April issue of *Nature* his further supportive evidence of the importance and correctness of Dart's findings on the Taung skull. He provided clarity of the several sutures he had viewed, their arrangement and made also vital comparative points of the teeth of the gorilla, orang and chimpanzee with *Australopithecus*. He pointed out Piltdown man had a human brain with a chimpanzee jaw though in *Australopithecus* there was a being also with a chimpanzee-like jaw but with a sub-human brain and this provided a connecting link between the higher apes and one of the lowest human types. He, however, made the Taung child nearer a fore-runner of Piltdown, then regarded by some as the earliest human variety. In spite of the fact that Broom had no doubts about the significance of Dart's discovery which he supported with considerable additional evidence and considered 'the age of the specimen in no way interferes with its being a true "missing link" and the most important hitherto

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13 Shellshear Museum Archives, Medical School, University of Sydney, R. A. Dart letter to Professor A. N. Burkitt, 11 Aug. 1927.

14 R. A. Dart letter to Patricia Morison, 29 Aug. 1983, copy held by F. Wheelhouse; R. A. Dart, 'Some notes on the double innervation of mesodermal muscle', *Journal of Comparative Neurology*, vol. 36, Apl. 1924, pp. 441-94. A description of the histological data concerning the somatic and sympathetic innervation of striated muscle and a discussion of the phylogenetic, embryological and physiological conclusions drawn.

discovered',<sup>15</sup> his ideas on the age of Taung, would later play right into the hands of Dart's adversaries. Broom noted the age of Taung to be 'probably not older than Pleistocene, and perhaps even as recent as the *Homo rhodesiensis* skull'.<sup>16</sup>

Despite his unsound geological estimate of Taung Dr Broom continued his strong support of Dart's findings not only in British journals but importantly in the *Natural History* journal of America. He also advised his findings to his life time friend, Professor W. J. Sollas, the well-known geologist and anthropologist of Oxford and whom Dart, as a Sydney University student in 1914, had listened to his lecture during the British Association conference in Sydney.<sup>17</sup> From Broom's contact with Sollas it becomes obvious that factors other than bias towards Piltdown man and the strongly favoured Asian origin of mankind by the finding in the 1890s by Eugène Dubois in Java of *Pithecanthropus erectus*, operated against the acceptance of Dart's discovery. Sollas in his reply to Broom of 25 March 1925 makes an interesting point, 'My conclusions based on the absurdly minute illustrations accompanying Dart's communication in *Nature* was that the skull represents simply a new species of chimpanzee or gorilla'.<sup>18</sup> The matter of unclear photographs had been made by Elliot Smith in his 14 February 1925 article in *The Illustrated London News*, 'I am unable to detect the points in question in the photographs'. However, Elliot Smith was quick to praise the diagrams which Dart had engaged student Henri Le Helloco to execute. Elliot Smith continued, 'but we can confidently accept his statement (graphically expressed in his diagram) that the lunate sulcus is much more widely separated from the parallel than is the case in the other apes'.<sup>19</sup> Of this aspect Phillip Tobias would later comment, 'Poor Dart, he could not be blamed for the degree to which the editor reduced the reproduction of his illustrations'.<sup>20</sup> However, it was Broom's skilful, effective drawings and additional supportive facts on the Taung skull which stirred Sollas into action. He assured Broom, 'Your letter and your illustrations in the *African Pictorial*, which you have so kindly sent me, awaken quite a new

15 Robert Broom, 'Some Notes on the Taungs Skull', *Nature*, vol. 115, no. 2894, 18 Apl. 1925, p. 570.

16 *ibid.*

17 Dart with Craig, *Adventures with the Missing Link*, pp. 42-43; Dart, 'Recollections of a Reluctant Anthropologist', *J. Hu. Evol.* vol. 2 1973, p. 418.

18 R. Broom, *Finding the Missing Link*, 1950, p. 25.

19 G. Elliot Smith, 'Australopithecus, the Man-like Ape from Bechuanaland', *The Illustrated London News*, 14 Feb. 1925, p. 240.

20 P. V. Tobias, *Dart, Taung and the 'Missing Link'*, 1984, p. 40.

spirit within me'. He noted as well, 'The teeth are a good point...The subject is so important that nothing less than an exhaustive monograph will satisfy the earnest enquirer...I suppose you couldn't get a sagittal section for me showing basion, opisthion, nasion, and bregma?'.<sup>21</sup>

When Sollas received the sagittal section from Broom, this enabled him to make further vital comparisons with chimpanzee skulls held in England. In his further articles in *Nature* and the *Quarterly Journal of the Geological Society of London*, Sollas showed he was more than ever convinced of Dart's accurate assessments of the Taung skull.<sup>22</sup> He could now divest himself of his earlier opposition to Dart's claims.<sup>23</sup> In his reply to Broom on 25 May 1925, Sollas advised he had made representations to Elliot Smith regarding Broom's and his own further decisive findings:

Elliot Smith was lecturing on Taungs last week...He states what I also thought before receiving your section. That seems to me to throw quite a new light on the matter. It is true we haven't a very large number of young chimpanzee skulls in our collection, but quite enough, I think, to go on with, and the more I compare them with Taungs the more difference I see, the more human Taungs appears. I should have named it *Homunculus*! I have just corrected proof of my communication to *Nature*, showing how widely Taungs differs from a chimpanzee...and am now preparing another to show how nearly it resembles man. The forehead is as thoroughly human as it is not anthropoid. It gives one a lot to think about.<sup>24</sup>

Broom conveyed this good news to Dart which must have lifted his spirits greatly. Nevertheless opposition to his Taung skull assessments prevailed and increased. In Edinburgh, Professor Arthur Robinson, lecturing on the Taung discovery described it as "the distorted skull of a chimpanzee just over four years old, probably a female".<sup>25</sup> It would seem that Sollas's information to Elliot Smith was too late for his lecture on 23 May 1925 at University College, London as Elliot Smith pointed out that while Dart's claim for Taung was that of a missing link, 'it was certainly not one of the really

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21 Robert Broom, *Finding the Missing Link*, pp. 25-26, quoting from a letter of W. J. Sollas of 25 May 1925.

22 Dart with Craig, *Adventures with the Missing Link*, pp. 42-43; Tobias, *Dart, Taung and the 'Missing Link'*, p. 40.

23 Tobias, *Dart, Taung and the 'Missing Link'*, p. 40.

24 Robert Broom, *Finding the Missing Link*, quoting from W. J. Sollas's letter of 25 May 1925, p. 26; Tobias, *Dart Taung and the 'Missing Link'*; provides the meaning of *Homunculus* as (little man), p. 40.

25 Dart with Craig, p. 38.

significant links for which they were searching'.<sup>26</sup> He still considered it an unmistakable ape and nearly akin to those still living in Africa. He conceded it represented a new genus though certainly not a new family. He pointed out:

It is unfortunate that Dart had no access to skulls of infant chimpanzees, gorillas or oranges of an age corresponding to that of the Taung skull, for had such material been available he would have realized that the posture and poise of the head, the shape of the jaws, and many details of the nose, face, and cranium upon which he relied for proof of his contention that *Australopithecus* was nearly akin to man, were essentially identical with the conditions met in the infant gorilla and chimpanzee.<sup>27</sup>

For Dart not only were scientists being adversely advised on his findings, but also the general public alike as Elliot Smith's speech was fully reported in *The Times* of 23 May 1925.<sup>28</sup> Dart fully realised Elliot Smith's view of his Taung skull was modified by his commitment to Piltdown (*Eoanthropus*) in that Piltdown seemed to corroborate 'his concepts that brain expansion and language led the way in the transition from ape to man'.<sup>29</sup> It becomes obvious that Elliot Smith remained bound in the main by his pronouncements that Piltdown afforded tangible confirmation of his hypothesis of possessing features as the first creature to reach Man's estate.<sup>30</sup>

Wilson had urged Dart to send accurate casts of his *Australopithecus* skull to the London experts to clarify his points of it. A disheartened Dart advised he was unable to locate skilled technicians to do so. Dart must find an answer to this problem soon as a request had come from the Wembley Committee for material on the Taung skull to be displayed at the South African Pavilion of the British Empire Exhibition to open in June a few

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26 *ibid.*, p. 38.

27 *ibid.*, p.38.

28 *ibid.*, p. 38.

29 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol 8. no. 3, June 1972, p. 174.

30 Shellshear Museum Archives, Medical School, University of Sydney, G. Elliot Smith, 'An Enquiry into the nature of the brain of primitive man, with special reference to the cranial cast and skull of *Eoanthropus*'. Typescript hand- corrected by Elliot Smith (perhaps intended for *Man*, vol. 16, 1916 ); G. Elliot Smith, Presidential Address to the Anthropological Sect. H. Dundee 1912 of the British Association for the Advancement of Science.

months away. If only he had the skilled services of the technicians of the British Museum! Lamentably there were none. He searched his mind for possibilities as to who might help him. In desperation he sought out a builder-plasterer to tackle the task of making casts, though with ever constant worry that in the process, damage might befall his precious Taung skull. Success however prevailed with this new help and that of some of his staff and friends who delicately formed the casts, painted and built up the neck and shoulder regions of the specimen. The end result he felt would suit the Wembley Committee.<sup>31</sup> (figs. 52, 53). He did, however, advise Wilson his casts were 'not sufficiently accurate to place in the hands of scientists', pointing out also that the Wembley Committee required monopoly of his casts during the time of the exhibition.<sup>32</sup> For the exhibition Dart prepared a chart for human evolution, boldly rating his Taung infant as ancestral to *Pithecanthropus* (Java Man) after which he placed Piltdown Man, Rhodesian Man with the African races radiating off. His banner read 'Africa the Cradle of Humanity' which the exhibition committee set out under the casts and chart on a beautiful base of velvet material within the glass case. Enormous curiosity was aroused by this display as the interested public clamoured to see just what the 'missing link'; looked like. Dart would anticipate correctly however, the indignant reaction it would provoke from others.<sup>33</sup> In hindsight Dart's chart came close to what would later be accepted as the roots of humanity, that is with the exception of Piltdown. His positioning of Piltdown Man after *Pithecanthropus* stirred more anger and rebuttal from his peers, to say nothing of his concept of Taung as the 'foundation stone of the human family tree'.<sup>34</sup>

Keith pointed out that earlier scientists had waited to make an examination of the fossil remains or instead casts of them before they could come to any definite decision on the Taung skull. Now on their arrival at Wembley and his viewing of them he could only vent his contempt:

Although the skull is anthropoid it has been marked by a "make-up" into which there have been incorporated many human characters. It

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- 31 University of Sydney Archives, The J. T Wilson Family Archives, P 162, series 5, item 4, R. A. Dart letter to J. T Wilson, 22 Apl. 1925.
- 32 University of Sydney Archives, The J. T. Wilson Family Archives, P. 162, series 5, item 4, R. A. Dart letter to J. T. Wilson, 22 Apl. 1925; Dart with Craig, *Adventures with the Missing Link*, p. 41
- 33 Arthur Keith, 'The Taungs Skull', letters to the Editor, *Nature*, vol. 116, no. 2905, 4 July 1925, p. 11.
- 34 *ibid.*, p. 11.

is true the ears are those of the chimpanzee, but the forehead is smooth and rounded, the hair of the scalp is sleek and parted; the bushy eyebrows are those of a man at fifty-five or sixty; the neck is fat, thick and full - extending from chin to occiput. In modelling the nose, gorilla lines have been followed, whereas the nasal part of the skull imitates closely chimpanzee characters. The mouth is wide, with a smile at each corner.<sup>35</sup>

His irritation at the manner in which he and other scientists now had to view them was obvious, 'If they wish to study them they must visit Wembley and peer at them in a glass case which has been given a place in the South African pavilion'.<sup>36</sup> This fine display which Dart and his team had so eagerly furnished fortunately won praise and was featured in *The Illustrated London News*,<sup>37</sup> in contrast to ridicule from Sir Arthur Keith. Even as Keith praised Dart for making a discovery of great importance and not wanting to detract from it, he continued to be both damning and ambivalent, 'An examination of the casts exhibited at Wembley will satisfy zoologists that his claim is preposterous'.<sup>38</sup> Whereas Arthur Keith on viewing the Taung casts found Dart's claims 'preposterous', Elliot Smith was so impressed by them as to advise a study of them now 'permitted scientists to revise the opinions they formed at the time the discovery was announced'.<sup>39</sup> Using two casts of the Taung skull with special permission from Captain Lane of the Wembley Exhibition, Elliot Smith supported his lecture to the crowded Zoological Society meeting in early June. At this he was able to demonstrate that a point of much previous controversy, that skull distortion had occurred, had in fact not taken place. He advised that being so the 'peculiar man-like form of the brain case and the face were genuine and distinctive features of the fossil'.<sup>40</sup> He could now confirm also Professor Dart's conclusions, 'that the brain was definitely nearer to the human type than that of any other ape'.<sup>41</sup> The audience became convinced through comparison of the Taung skull models with those of apes of a corresponding age, how strikingly different they were, while Elliot Smith explained this 'fully

36 Arthur Keith, 'The Taungs Skull', *Nature*, vol. 116, no. 2905, 4 July, 1925, p. 11; 'The Taungs Skull : Professor Dart's Reconstruction at Wembley', *The Illustrated London News*, 13 June 1925, pp. 1154-55.

37 'The Taungs Skull: Professor Dart's Reconstruction at Wembley', *The Illustrated London News*, 13 June, 1925, pp. 1154-55.

38 Arthur Keith, 'The Taungs Skull', *Nature*, vol. 116, no. 2905, 4 July 1925, p. 11.

39 G. Elliot Smith, 'Professor Dart Upheld : Casts of the Taung Skull Convince Sceptics', *Cape Argus*, 11 June 1925.

40 *ibid.*

41 *ibid.*

justified the claims Professor Dart put forward that the Taungs skull is that of a hitherto unknown man like ape'.<sup>42</sup>

While Arthur Keith remained unyielding even with the new evidence of the casts of the Taung skull at Wembley Stadium, Elliot Smith, now reenforced with Sollas's additional supportive research in conjunction with Robert Broom would give eloquent and sincere tribute to Dart. Conversely Keith would emphasise the skull to be that of a young anthropoid ape. His tirade of objections as in earlier articles continued, though this time he sought to use some of Dr Robert Broom's words as a weapon against Dart. It must have disappointed Dart that Keith particularly took up the points Broom made on the geological age of Taung including this point, 'At present all we can say is that the skull is not likely to be older than what we regard as the human period',<sup>43</sup> and that Keith disregarded Broom's otherwise excellent supportive and numerous additional confirmatory points on Taung. In consequence this allowed Keith and the British establishment to continue dismissal of the Taung skull as not likely to be geologically of great antiquity.<sup>44</sup> At a loss over such points of view, Dart wrote, 'But criticism rather than adoration of their potential ancestry seemed to be the overseas reaction'.<sup>45</sup> His strong ally Robert Broom would later write:

Here was a man who had made one of the greatest discoveries in the world's history - a discovery that may yet rank in importance with Darwin's *Origin of Species*; and English culture treats him as if he had been a naughty schoolboy.

I was never able to discover what were Professor Dart's offences. Presumably the most serious was that when he found a very important skull he did not immediately send it off to the British Museum, where it would have been examined by an "expert" and probably described 10 years later, but boldly described it himself, and published an account within a few weeks of the discovery.<sup>46</sup>

Broom himself held the view that the British establishment always considered work from the Colonies to be only second rate.<sup>47</sup> He doubted the attack on Dart did any good for the British Museum, noting that since

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42 *ibid.*

43 Robert Broom, 'Some Notes on the Taung Skull', *Nature*, vol. 115, no. 2894, 18 Apl. 1925, p. 570.

44 Arthur Keith, 'The Taungs Skull', *Nature*, vol. 116, no. 2905, 4 July 1925, p. 11.

45 Dart with Craig, *Adventures with the Missing Link*, p. 38.

46 Robert Broom, *Finding the Missing Link*, p. 27.

47 L. H. Wells, The Robert Broom Memorial Lecture, 'One Hundred Years : Robert Broom 30 November, 1866—6 April, 1951', *S. Afr. J. Sci.*, vol. 63, no. 9, Sept. 1967, p. 357.



1921 no early human or pre-human skulls had been sent to London, at least not from South Africa. 'Our wonderful South African "Missing Link" was discredited, and became a joke; and no one worried to look for more'.<sup>48</sup> In Broom's opinion, 'No scientist ever objects to being opposed by others, who fail to see as he sees; but Dart was I think attacked very unfairly'.<sup>49</sup>

For Dart to be able to withstand the tirade of attacks levelled upon both his work and himself ever since the discovery of the Taung skull, says much for his moral fibre and strength of character. Every now and then, mercifully, something happened to cheer the inner man and an invitation from the Prince of Wales in June 1925 to visit him at the Carlton Hotel in Johannesburg, proved such an occasion.<sup>50</sup> During a tour of the Union of South Africa, the Prince would open the Central Block at the University of the Witwatersrand on 23 June. The event would prove both hilarious and embarrassing for many. A bogus prince (though sanctioned by the real Prince, the Principal and the Registrar) stole the show first, fooling everyone by arriving in style, taking the Royal Salute and being greeted as genuine by officials before finally inspecting the Guard of Honour. The deception was soon realised when the real Prince of Wales arrived to perform his official duties.<sup>51</sup> Mingling later with academic staff, he extended an invitation to Dart to bring his Taung skull to him in his suite at the Carlton Hotel. For Dart the occasion proved both friendly and reassuring, as Dart records:

I was slipped in through the back door and taken to the Prince's apartment where he was seated on the bed relaxing in shirt and jodhpurs after an afternoon's riding. He said that since he had been in South Africa, he seemed to have heard of nothing but the Taungs "baby" and was curious to see it. I thought he was being merely polite, but as soon as I handed it to him from my little black box I realized I was wrong. He ran his fingers over the cast with unfeigned interest and I think everyone in the room was startled when he remarked to one of his aides, "Look at this, you can actually see the blood vessels coursing over the brain cast".<sup>52</sup>

Dart was certainly impressed by the Prince's quick grasp of the important features of the Taung skull and would reflect, 'What a pity it was

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48 Robert Broom, *Finding the Missing Link*, p. 27.

49 *ibid.*, p. 26.

50 Dart with Craig, *Adventures with the Missing Link*, p. 43.

51 Bruce K. Murray, *Wits The Early Years: a History of the University of the Witwatersrand Johannesburg and its Precursors 1896-1939*, Witwatersrand University Press, Johannesburg, 1982, pp. 370-71.

52 Dart with Craig, *Adventures with the Missing Link*, p. 43.

that some of his scientifically knowledgeable subjects had not been as quick to grasp the more important points as their king had been to notice a feature that would have been lost on most lay minds'.<sup>53</sup>

In England none of the scientists' arguments laid against his Taung skull persuaded Dart to deviate in the slightest from his earlier conclusions. He stood by them - they were 'irrefutable'.<sup>54</sup> Some writers contended that Dart lost interest in following up his findings with more specimens and further work on Taung, a misrepresentation which he corrected in his later writings.<sup>55</sup> Evidence proves that Dart's interest and activities regarding his Taung discovery, all other work and duties taken into consideration, remained firmly positive, active and productive. That he was conscious of the need to find more specimens is seen for example, in the fact that from February 1925 he made constant reports and interviews with newspapers stating, 'What would be more worthwhile in the interests of Science would be for an appeal to be made to have every lime deposit being worked at present in the Union and Rhodesia carefully watched for the unearthing of bones of any sort'.<sup>56</sup> He would have respected Elliot Smith's comment on his lack of available comparative anthropoid material in South Africa and in this regard may have felt assured that Broom through Sollas and his comparative specimens at Oxford University had this point well in hand. This may have been one of the reasons he turned down his own University's offer of leave to travel overseas, talk on his Taung skull and access comparative anthropoid material in England. However, there were other reasons for refusing this offer as he points out:

Perhaps, like Davidson Black, I should have traveled overseas with my specimens to evoke support for my beliefs, and I was presented with this opportunity. The Witwatersrand Council of Education wrote to say they appreciated that, because of the lack of comparative material in the form of anthropoid skulls of corresponding age, it would be impossible for me to perform a satisfactory monographic study of the Taungs skull in South Africa. The Council said they

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53 *ibid.*, p. 43.

54 *ibid.*, p. 11.

55 Dart with Craig, *Adventures with the Missing Link*, pp. 70-71, citing Ruth Moore, *Man, Time and Fossils*, 1954 and Herbert Wendt, *I Looked for Adam*, 1955; Robert Broom *Finding the Missing Link, 1950*. It is noted John Reader in his *Missing Links; The Hunt for Earliest Man*, Little, Brown & Co., Boston, 1981, p. 92, does not credit Dart with further work on Taung, other than his monograph on *Australopithecus*.

56 P. V. Tobias, *Dart, Taung and the 'Missing Link'*, p. 39 quoting from an extended report of an interview with Dart in the *Cape Times*, 5 Feb. 1925, p. 9.

were willing to defray the expenses of my going to England for this study provided I donated the skull to the university. After careful thought, I decided I could not be bound by such a conditional undertaking, nor was I prepared to absent myself for so long a time from the young department and my newly established home.<sup>57</sup>

Rather than being dissuaded by intimidatory negative reports of scientists in England, Dart began preparation of yet another paper on his Taung skull and boldly provided many facts to discount their objections to his assessments and to point out how really significant *Australopithecus* was. He explained how man, to achieve his erect posture and terrestrial state previously had to pass through two severe phases, one of semi-arboreal and a second phase, one of terrestrial which was exhibited in the Taung form. He pointed out how *Australopithecus* because of his brain and upright posture was enabled to exist in a separated domain of drier, harsher habitat and vastly different to that of his forest dwelling, fruit-eating relatives.<sup>58</sup> Dart went into great detail about such facts because he said he felt, 'that certain of the criticisms that have been made of my conclusions have been prompted by a failure to appreciate the presence of this barrier and the unquestionable nature of the results which the barrier and the terrestrial life, to which it committed them, must have had upon the bodily form of an anthropoid group which, prior to their leaving the forest, were semi-arboreal in habit'.<sup>59</sup>

Dart would refute the suggestion made by some that the Taung skull had been washed into the cave from the surface in recent time. Further he could not accept the child as a victim of a carnivore, as if it were a den of one, large bones would have been present. He pointed out these ideas were not possible as the jaws were intact and that fragments of the distal ends of the forearm bones and phalanges were present in the same rock mass, (later confirmed not to be present) and there was also evidence of associated food remains of a wide variety, including small picked bones, representing a midden heap. This points to the cave as the habitat of the Taung child and thus differs from another suggested theory of the child's death made seventy years later that it was captured on the plains by a

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57 Dart with Craig, *Adventures with the Missing Link*, p. 51. Note: Quote taken from the American edition, hence American spelling of 'traveled'.

58 Dart, 'Taungs and its Significance', Reprint from *Natural History*, vol XXV1, no. 3, 1926, 316-17.

59 *ibid.*, pp. 318.

swooping crested eagle and dropped down a sink hole.<sup>60</sup> A point which to date no others have brought forward is Dart's own statement in relation to the aspect of his search. He wrote in his paper, 'This conclusion was reached after many protracted searches by the mine operatives and myself for the accompanying fauna'.<sup>61</sup> This clearly indicates that he was in touch with the mining people.

While Dart's adversaries assumed a young geological age for the cavernous limestone deposits in which the Taung skull was found, Dart considered they might be Tertiary and that the limestone had been deposited irregularly with filling up of the caves from a very ancient period.<sup>62</sup>

The problem in those times was the lack of knowledge of a proper geological scale of the earth's rocks and their ages and dating techniques to determine them and the fossils contained in them—that would come decades later, although many pioneer geologists (Roger Bacon, Leonardo da Vinci, Nicolaus Steno, John Strachey, Johann G. Lehmann, George C. Füchsel, Peter S. Pallas, Abraham G. Werner, James Hutton, Charles Lyell, Georges Cuvier, William Smith, de Monet, de Lamarck) framed systems to meet the needs of the day. These were vastly different in time values to those later assessed.<sup>63</sup> Sir Arthur Keith in his books *Antiquity of Man* (1915) and *New Discoveries Relating to the Antiquity of Man* (1931), show anatomically modern man to have separated at the beginning of the Pleistocene which he estimated commenced 200 000 years ago. He assessed the Pliocene as commencing 250 000 years before the beginning of the Pleistocene with Peking Man emerging on the human stem with Piltdown Man, the only other candidate on this stem line about three quarters of the way to the Pleistocene. Branching off from Peking Man during this epoch he shows *Pithecanthropus* (Java Man), Neanderthal Man and Rhodesian Man, all of which today has little relevance. Instead there is the science of Geochronology—the interpretation and dating of the

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60 Dart, 'Taungs and Its Significance', 1926, p. 318; Rick Gore, 'The Dawn of Humans : The First Steps', *National Geographic*, vol. 191, no. 2, Feb. 1997, pp.74-75, 95-96; Sue Armstrong, 'Taung Child "fell from the sky".' *New Scientist*, vol. 147, no. 1994, 9 Sept. 1995, p.7.

61 Dart, 'Taungs and its Significance', Reprint from *Natural History*, vol. XXV1, no. 3, 1926, pp. 320. 21.

62 *ibid.*, p. 322.

63 *The New Encyclopaedia Britannica*, 15th edn., 1994, vol. 19, pp. 748-55.

geological record, which assesses the age of the earth today to be about 4000 million years. In 1860 the earth's age was estimated to be 96 million years old, 1584 million years old in 1893 and in 1909, 80 million years old. However it was Arthur Holmes's relative geologic time scale which had taken nearly 200 years to evolve, which provided a more realistic answer. Today a systematic scale is used which divides Eons, Eras, Periods and Epochs into approximate numbers of millions of years, as shown in the table<sup>64</sup>, (fig. 54). The late Miocene Epoch is thought to be when certain beings separated from a common stock, one type to progress towards the human line, the other to the modern day apes.

However in his 1926 paper with unreliable geological information available generally and in particular for the Taung cave, Dart would argue the age of his Taung skull from a completely different and logical viewpoint, past evidence which might link up with later evidence. He noted southern Africa during long avenues of time had already produced four human types of fossils, Rhodesian, Boskop, Bush and Bantu, all of which were presumably locally evolved. The term Boskop has been discarded. Specimens with large skulls are thought to be early forms of the Bushman - now San. Some San people today possess large skulls. He advanced an idea of Africa as the possible source of the Neanderthal stock. However, this has not been confirmed. He argued early man's remains and tools found with various extinct animal remains corroborated the conception of man's antiquity in southern Africa and that this was particularly shown in the gravels of the Vaal Watershed, which were apparently of Pleistocene age. He noted in the Taung region there was evidence of human habitation, cave paintings and delicate stone culture and work in bone by the Bush people, the remoter Boskop and Rhodesian people in later soil stratifications but not in the depths of the limestone fissures and caverns at Taungs. He argued that as only *Australopithecus* remains had been found in these great depths in the limestone fissures they would logically pre-date other later human forms.<sup>65</sup> Dart did however continue to consult with geologist Professor R. B. Young on any determinations he could make as to the age of the Taung caves and also with Dr Sidney Haughton regarding the different species of primitive baboon fossils located there as possible indicators to the age of the

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64 *ibid.*, vol. 5, pp. 190-91.

65 Dart, 'Taungs and its Significance, Reprint from *Natural History* vol. XXV1, no. 3, 1926, pp. 322-23.

Taung cave. Meanwhile isolation in the same breccia as the Taung skull of a broken, splintered baboon's innominate bone, strengthened Dart's view as to the baboon's role in the mixed general omnivorous diet of the australopithecines.<sup>66</sup>

Further points were made by Dart to assuage his critics regarding the superior brain capacity of Taung relative to the orang, chimpanzee and gorilla by means of superimposition in each case of the *Australopithecus* outline over them. He provided photographs of the actual Buxton Limeworks at the time when the Taung skull was located. (fig. 45). These may have been provided by Professor Young.<sup>67</sup> Featured was Forestier's clever restoration of the head of Taung used by Elliot Smith in his early article of Taung in *The Illustrated London News*. Finally shown was a sagittal profile of the Taung skull and that of a child of six years depicted by Professor W. J. Sollas of Oxford University in support of Dart's conclusion that, "*Australopithecus* is doubtless generically distinct from all known Apes, and in those important characters by which it differs from them it makes a nearer approach to Hominidae" (mankind).<sup>68</sup> It does not surprise Dart did not send this paper to *Nature* but found publication for it in America in 1926 in the journal, *Natural History*. Nor does it surprise his ideas in it only brought further scorn from his English adversaries. Nevertheless Dart continued preparing his expanded monograph on the Taung skull for presentation later to the Royal Society in London. He also persevered with his exacting, delicate task of endeavouring to separate the upper and lower jaws of the Taung skull.<sup>69</sup> That he should attempt this sent a pang of fear through Dr Broom.<sup>70</sup> With all this evidence on Dart's continued work and writings on his Taung specimen, it is hard to see how any writer could suggest that he had lost interest in it!

While on-going rejection of his Taung skull overseas gained pace, Dart had little time to dwell on this, so busy was he with developing and running his Medical School.<sup>71</sup> The distinguished Emeritus Professor William W. Howells in America advised the German scientist Adloff had

66 Dart, 'Taungs and its Significance', Reprint from *Natural History*, vol. XXV1, no. 3, 1926, p. 321; Dart with Craig, *Adventures with the Missing Link*, pp. 94, 199; Tobias, *Dart, Taung and the 'Missing Link'*, p. 39.

67 Tobias, *Dart, Taung and the 'Missing Link'*, p. 24; Dart, 'Taungs and its Significance', Reprint from *Natural History*, vol XXV1, no. 3, 1926, p. 324.

68 Dart, 'Taungs and its Significance', p. 327.

69 Dart with Craig, *Adventures with the Missing Link*, p. 53.

70 Tobias, *Dart, Taung and the 'Missing Link'* 1984, pp. 44-45.

71 Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 293.

proclaimed the Taung skull a hominid. Dart was aware of this but Adloff's was a voice in the wilderness. Howells remembers the two-day front page coverage of Dart's discovery in the *New York Times*, followed by 'utter silence' from anthropologists in America. He noted an article in *Science* which quoted Dart a couple of weeks later. Howells mentions that perhaps the only scientist concerned with human lineage at the time was Dr Alès Hrdlička of the Smithsonian Institution.<sup>72</sup> Dart invited him to South Africa to see the Taung skull and its place of discovery. He did so in August 1925 when on a world trip to sites of other finds of early man in Java, China, India and Rhodesia where the Broken Hill or Rhodesian skull had been found in 1921. He was the first overseas scientist to fully examine the Taung skull. His article on return to America in the *American Journal of Physical Anthropology* disappointed. He found the discovery important in that it showed anthropoid apes had reached South Africa. However, in the main he agreed with the British scientists and in a lecture to the Royal Anthropological Institute chaired by Sir Arthur Keith, he declared Taung 'a new species if not genus of the great apes' and called for the need for adult specimens.<sup>73</sup> This infuriated Dr Broom who wrote:

Here we had an almost complete fossil skull of an interesting primate, with perfect milk-teeth and first molars, and with a nearly perfect brain-cast, and we find America's greatest anthropologist unable to give any opinion on its affinities.<sup>74</sup>

Knowing that Sir Arthur Smith Woodward's position was essentially similar, Broom retorted, 'These authorities seem to have had a strange lack of confidence in themselves. It does not inspire much confidence in African workers, or convince them of the wisdom of sending remarkable finds to London or Washington'.<sup>75</sup> Broom responded quickly to this further rejection of Dart's Taung skull:

So confident was I that Dart was right that I wrote several papers in support of him. In one, published by the Zoological Society of London in 1929, I pointed out that the milk-teeth of *Australopithecus* are almost exactly similar to those of man, and very unlike those of the chimpanzee and gorilla. At that time the lower jaw had not been removed from the upper and we could not see the occlusal surfaces

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72 William W Howells, 'Taung: A Mirror for American Anthropology', in *Hominid Evolution: Past Present and Future*, (ed.) P. V. Tobias, Alan R. Liss, Inc., New York, 1985, pp. 19-24.

73 Dart with Craig, *Adventures with the Missing Link*, p. 50; R. Broom, *Finding the Missing Link*, p. 28.

74 Robert Broom, *Finding the Missing Link*, p. 28.

75 *ibid.*, p. 28.

of the teeth satisfactorily, but, to my mind, even the side views showed convincingly that the Taungs being must be placed near to man, and not near to the higher anthropoids.<sup>76</sup>

Broom would later state, 'Both Elliot Smith and Sollas became converted to the view that Dart was essentially right in his conclusions. But probably the majority of scientists both in England and America continued to believe Dart had made a mistake'.<sup>77</sup> On this point Professor Phillip Tobias commented, 'Yet, although Broom, Sollas and to a certain degree Elliot Smith (1925b, 1925c) came to agree with Dart, wholly or in part, most other scientists did not'.<sup>78</sup> While Dart himself knew of his assured support from both Broom and Sollas, and valued Elliot Smith's views, did Dart in fact really gain much support from Elliot Smith? He thought he had to some degree on certain points but not on others after reading Elliot Smith's 2nd edition of *The Evolution of Man Essays* on which Dart commented, 'He still agreed in 1927 with my original interpretation of the Taungs endocranial cast...and went beyond it in noting additionally the humanoid form of its orbital margin'.<sup>79</sup> While Elliot Smith recognised the possibility of the adult *Australopithecus* having a brain capacity larger than that of a gorilla and conceded Dart's ideas of contrast in its dietary habits to that of living anthropoids, he nevertheless firmly stated, 'there is no evidence to suggest that its posture differed from that of the chimpanzee'.<sup>80</sup> In the main therefore, it would seem he disagreed with most of Dart's findings.

In Johannesburg the continuous string of letters and visitors, requests for lectures on his discovery and the rare visits of overseas students to view it, warmed Dart.<sup>81</sup> (fig. 55). He had been lifted greatly too by his appointment as Dean of the Faculty of Medicine and the distinction his Taung skull had conferred on his University.<sup>82</sup> His multilayered duties of Dean with their embracing host of committee meetings, his participation in scientific conferences, his field and research work, kept him fully occupied.

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76 *ibid.*, p. 29.

77 *ibid.*, p. 26.

78 Tobias, *Dart, Taung and the 'Missing Link'*, p. 41.

79 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol 8. no. 3, June 1972, p. 174.

80 *ibid.*

81 Frances Wheelhouse, *Raymond Arthur Dart : A Pictorial Profile : Professor Dart's Discovery of 'The Missing Link'*, Transpareon Press, Sydney, 1983, p. 53.

82 Bruce Murray, *Wits the Early Years*, 1982, pp. 127, 143, 179-84; Dart with Craig, *Adventures with the Missing Link*, pp. 43-44.



The 1925 Oudtshoorn meeting of the South African Association for the Advancement of Science under the overall Presidency of General Smuts and his own role as president of the Anthropology section, had gone well. Dart read two papers, one on grooved round stones from Heilbron in the Free State (formerly Orange Free State) another on fossil bones from Makapansgat, in the Transvaal. The Makapansgat bones which he was to interpret as coming from a primitive kitchen midden were sent to him by Mr. W. I. Eitzmann, a school teacher, would feature significantly in his later research.<sup>83</sup> This conference was the means by which Dart met many famous scientists, including John Goodwin, and future meetings of this society would provide a rich lode of scientific colleagues and friends. C. van Riet Lowe would be one to rise to scientific greatness via his path from the army to engineer of the Public Works Department in the Orange Free State, and later as Professor of Archaeology and finally as Director of the Bureau of Archaeology. His contributions to South African archaeology would be enormous. From his first letter to Dart in 1926 advising of his discoveries and collection of stone tools thus far as an amateur, he and Dart would share a thirty-year companionship and achievement in South African Prehistory.<sup>84</sup>

When Dart had arrived at the Medical School in 1923 he soon recognised many deficiencies in medical and related education. For example, he, along with other interested people spotted the lack of adequate training for white nurses, masseurs, physiotherapists and other medical technicians. Organisation of a Congress of South African Nurses had recently taken place at the Johannesburg Hospital under Matron B. G. Alexander, and co-operating with her, Dart worked amongst many specialised women in these fields, and by 1926 he had recommended courses in the Faculty of Medicine for some of these groups.<sup>85</sup> (fig. 56). Despite opposition from many quarters over the years, such efforts were to

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83 Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 292.

84 *ibid.*, pp. 291-97.

85 Dart, 'Saying Farewell', *Physiotherapy*, Sept. 1968, pp. 2-4; Mary Bisset Lucas, 'The Complete Opportunist or Professor Raymond Dart and Physiotherapy in South Africa', *Adler Museum Bulletin*, vol. 19, no. 3, Dec. 1993, pp. 3-7; P. V. Tobias, 'Homage to Emeritus Professor Raymond Arthur Dart on his 75th Birthday: 4 February 1958', *S. Afr. J. Sci.*, , vol. 64, no. 2, Feb. 1968, p. 44.

be realized in 1938 with the first nursing and physiotherapy diplomas issued in 1940.<sup>86</sup>

A much longer battle was waged, and won, over the education of black doctors and black nursing aids. To date the only way for blacks to gain medical qualifications was at some overseas universities. Dart was appointed to the Loram Committee of six people whose interests were not only education of black people in medicine but also in their prevention of diseases through lack of medical attention for the black population. C. T. Loram, who chaired the Committee was a former Chief Inspector of Native Education in Natal and a member of the Union Native Affairs Commission. The Loram Committee was appointed by the Department of Native Affairs. Dart brought before his University resolutions from the committee for the need to train black doctors and measures to implement this. The Lorem Committee endured wide-ranging opposition generally and untold lengthy negotiations with the Government and its departments whose resistance finally caved in during World War 11.<sup>87</sup> In 1926 Dart managed to introduce a post-graduate diploma of Public Health. In 1929 diploma courses were added in tropical Medicine and Hygiene, also Psychological Medicine, and additionally a Master of Surgery (higher) degree.<sup>88</sup>

With Professors Doke, Kirby and Maingard, Dart became a key figure in promoting African studies.<sup>89</sup> In 1925 he had introduced the subject of Comparative Odontology in his Anatomy Department, for which he engaged as his senior lecturer, twenty-four year old Irishman, J. C. Middleton Shaw. From this grew the Dental Faculty in 1929. Shaw became the first Director of the Oral and Dental Hospital and Dean of the new Faculty. Dart's influence on Shaw was most significant in his research covering the comparative odontology of all types of past and present races in South Africa.<sup>90</sup> Meanwhile Dart's first senior lecturer from 1923, Dr Gordon D. Laing from Aberdeen set his interests on Boskop skulls and post-cranial

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86 Dart, 'Saying Farewell', *Physiotherapy*, Sept. 1968, pp. 2-4; Mary Bisset Lucas, 'The Complete Opportunist', *Adler Museum Bulletin*, vol. 19, no. 3, Dec. 1993, pp. 3-7.

87 Bruce K. Murray, *Wits the Early Years: A History of the University of the Witwatersrand Johannesburg and its Precursors 1896-1939*, Witwatersrand University Press, Johannesburg, 1982, pp. 302-14.

88 Dart, 'Saying Farewell', *Physiotherapy*, 1968, p. 2; Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p.293.

89 Bruce K. Murray, *Wits The Early Years*, p. 183.

90 Bruce K Murray, *Wits the Early Years*, pp.188-190; Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 293.

bones, while Dart guided many of his talented students into a wide range of highly effective researches.<sup>91</sup>

Perhaps the greatest personal satisfaction Dart enjoyed since coming to Wits, but in which he played little part other than as a source of encouragement, was his wife Dora's striking academic attainment at the conclusion of 1926. (figs. 56, 57). Although often beset by bouts of ill health,<sup>92</sup> Dora had resumed her medical studies at Wits not long after arrival in Johannesburg to work towards her medical qualifications and, in 1926 succeeded in gaining the degrees of Bachelor of Medicine and Bachelor of Surgery. Dora as top student won the Bronze Medal of the Witwatersrand branch of the Medical Association of South Africa (a branch of the British Medical Association) as the most distinguished medical graduate of the year. A most laudable attainment inasmuch as Dora wrote her final examinations in a hospital bed with a supervisor by her side. In 1927 and aged thirty-three Dora was appointed to the staff of the Department of Medicine at Wits as a clinical assistant; she also won appointment on the honorary staff of the Johannesburg General Hospital. Dear to her heart was the scheme for native women at the Bridgeman Memorial Hospital and for which she consented to be a director.<sup>93</sup> Both Dora and Raymond Dart shared their concern for the welfare, health and education of blacks in their adopted land. Once blacks were permitted to enrol in medical courses, Dart succeeded in gaining provision for them of on-campus hostel accommodation.

### **New Directions:**

The scientists in England had had two years to examine the casts made by Dart of the Taung skull for the Wembley Exhibition and had further evidence in support of it.<sup>94</sup> Even though he would not be present at the

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91 Dart with Craig, *Adventures with the Missing Link*, p. 22; University of Sydney Archives, The J. T. Wilson Family Archives, P. 162, series 5, item 4, R. A. Dart, letter to J. T. Wilson, 22 Apl. 1925.

92 University of Sydney Archives, The J. T. Wilson Archives, P. 162, series 5, item 4, R. A. Dart letter to J. T. Wilson, 22 Apl. 1925.

93 *Rand Daily Mail*, Johannesburg, Sat. 26 Mar. 1927, 'Dr Dora Dart, Honours for Brilliant Medical Graduate; "Young Girl Graduates, our Educated Women - Today's Honours'.

94 Dart with Craig, *Adventures with the Missing Link*, p. 52.

1927 meeting in England of the British Association for the Advancement of Science, Dart felt it was bound to be revived at that meeting. That Sir Arthur Keith as chairman emphasised only the importance of *Pithecanthropus* (Java Man) and Piltdown Man came as a shock to Dart, as did Keith's further rebuke of *Australopithecus* in that same year. His chapter on the evolution of man in J. A. Hammerton's, *Universal History of the World*, eliminated his Taung skull as being, 'too late in the geological record to play a part in Man's ancestry'.<sup>95</sup> Dart suffered the consequences of Keith's pronouncements which were favoured in such papers as the *Cape Times* and resulted in some groups in South Africa also attacking his views.<sup>96</sup> These were difficult times for Dart exacerbated by the death of his much loved sister, Lucinda, aged forty-four in 1928.<sup>97</sup>

Grasping every spare moment of time Dart continued his delicate task to separate the Taung skull's upper jaw from its lower one. Such was this intricate task, it would take years of endeavour. Meanwhile in the 1920s newspapers of the world carried the stirring news that a further search for 'Pre-Dawn Man' was being undertaken in Asia by a fourth expedition to the Gobi Desert in Mongolia. Fuelled by the discovery of fossil reptilian and mammalian bones from previous expeditions, hopes ran high in 1928 for discovery of human fossil remains that, 'will not be man-like', as leader Roy Chapman Andrews stated, further mentioning, 'It will be right in the human stem, ape-like, but showing in the teeth some human characteristics'.<sup>98</sup> Andrews made no reference that Raymond Dart had already found such a form in South Africa four years earlier. The expeditioners further alerted that if they found this pre-dawn-man, 'the Piltdown controversy will be a Sunday school picnic compared with the scientific discussion that will result. If we get any remains in these old strata', they declared, 'it will decide whether we are monkeys or an independent creation'.<sup>99</sup> A watching world of believers in the far East concept and sceptics alike read press comment with heightening interest, and waited, while dark clouds continued to obscure Dart's African discovery.

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95 *ibid.*, p. 52, quoting Keith.

96 *ibid.*, p. 53.

97 Dart, 'Nasal Hygiene - A Contribution to the Prevention and Control of Nasal Infection', the *Leech*, June 1936, reprint, p. 1; H. W. Dart, *Happenings Historic, Heroic and Hereditary*, 1981, p. 104.,

98 *The Times*, 7 June 1926, 'The Gobi Desert : Former Centre of Teeming Life'; *Manchester Guardian*, 20 Apl. 1928, 'Pre-Dawn Man'.

99 *Manchester Guardian*, 20 Apl. 1928, 'Pre-Dawn Man'.

Expeditions to Mongolia had begun as early as 1919. Financed by the Rockefeller Foundation based on a theory proffered at the turn of the century by the leading American palaeontologist, D. W. Matthews, that in the uplifting of the Himalayas millions of years previously, separation of anthropoid groups had taken place gradually to the east and to the west, the animals accommodating to a different habitat and food source in China and in Africa.<sup>100</sup> In discussing this theory Elliot Smith had suggested that *Australopithecus* might have come to Africa from a line of Indian *Dryopithecus* apes who had moved south down through the Dark Continent.<sup>101</sup>

At the turn of the century European scientists had become fascinated with the rare animal fossils gathered in the Far East. An unusual tooth brought back by the German, Dr K. A. Haberer which he purchased from an apothecary shop in Peking, when examined by Professor Max Schlosser at Munich in 1903 gained much interest as being ape-like or man-like, (it later disappeared from the collection). In the early 1920s funds from Sweden allowed Dr Johann Gunnar Andersson to begin excavation of a cave at Chou K'ou Tien (now Zhoukoudian) near Peking. Assisting was Dr O. Zdansky, who found a strange tooth and shipped it with crates of material back to Uppsala University where he later examined this material, found another similar tooth and in time advised Andersson, still excavating there in China.<sup>102</sup>

Most interested in this discovery was Davidson Black, appointed in 1922 as professor of embryology and neurology at Peking Union Medical College established with the generosity of Rockefeller Foundation Funds. Black, a graduate of the University of Toronto, had also in 1914 studied at Manchester under Grafton Elliot Smith. After serving in the war and earlier inspired by the Himalayan theory of uplifting in relation to its possible role in man's origins, he had taken the position in China.<sup>103</sup> He soon gained more funds from the Rockefeller Foundation to continue excavations outside

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100 Dart with Craig, *Adventures with the Missing Link*, p. 47; G. Elliot Smith, *The Evolution of Man Essays*, Oxford University Press, London, 1924, p. 62.

101 G. Elliot Smith, *The Search for Man's Ancestors*, Forum Series - 16, Watt & Co., London, 1931, p. 49.

102 G. H. R. Von Koenigswald, *Meeting Prehistoric Man*, Thames and Hudson, London, 1956, pp. 40-45.

103 G. H. R. Von Koenigswald, *Meeting Prehistoric Man*, p. 44; Dart with Craig, *Adventures with the Missing Link*, p. 48.

Peking for their newly created Cenozoic Research Laboratory attached to the medical college. On 16 October 1927, Swedish geologist, Dr Birger Bohlin found a massive human molar tooth and gave it to Black. He would designate it *Sinanthropus pekinensis* (Black and Zdansky), Peking Man, , would have made especially a large gold watch chain with a receptacle fashioned in the shape of a Buddha attached to house this tooth, then in 1928 travel the world to lecture on it.<sup>104</sup> John Reader presents a delightfully informative narrative, substantially documented with letters and photos of the various scientific groups, people involved, including Swedish Royalty concerned with these cave explorations and discoveries, even highlighting the personality clashes between some, particularly that of Zdansky and Andersson.<sup>105</sup> Whereas Davidson Black wrote an exhaustive treatise on this one tooth and was rightly hailed and revered for this by the British and American scientific circles, Dart's seminal work on *Australopithecus* on a much larger fossil skull and of greater antiquity was derided and shunted aside.

In September 1927 Professor Lidio Cipriani, leader of a scientific expedition in Africa broke away from his travels to visit Dart. He was only the second overseas scientist since Dr Hrdlička in 1925 to do so. Dart invited Cipriani to examine the Taung skull and visit its habitat in the Cape Province. Cipriani would publish his findings in an Italian journal the following year;<sup>106</sup> but little would come of such vital information until some sixty years later when it and some unpublished photographs of the Buxton Limeworks, taken in September 1927 were unearthed through the assistance of Dr J. Moggi-Cecchi for Professor Phillip Tobias. The photographs and information were the work of his great-uncle, Professor Lidio Cipriani. This research by Cipriani together with that of Tobias's team from 1988-1993 aided by work carried out by Hrdlička (1925), Frank Peabody (1947-48), did much towards establishing the geological age of the

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104 Von Koenigswald, *Meeting Prehistoric Man*, pp. 40-45; Dart with Craig, *Adventures with the Missing Link*, p. 48; John Reader, *Missing Links: The Hunt For Earliest Man*, 1981, pp. 96-117.

105 John Reader, *Missing Links: The Hunt For Earliest Man*, 1981, pp. 96-117; Von Koenigswald, *Meeting Prehistoric Man*, pp. 40-45.

106 L. Cipriani, 'Sull *Australopithecus africanus*, Dart', *Arch. Anthrop. Etnol.* LV11, 1928, pp. 1-29, as quoted by Jeffrey K. McKee & Phillip V. Tobias, 'Taung stratigraphy and taphonomy : preliminary results based on 1988-93 Excavations', *S. Afr. J. Sci.*, vol. 90, no. 4, Apl. 1994, p. 235.

Taung child to be assessed 'tentatively to c. 2.8-2.6 Myr.'<sup>107</sup> (million years).

Yet another overseas scientist, Alfred Sherwood Romer would visit Dart's Medical School from the Walker Museum, University of Chicago, doing so in 1929. Dart had in fact written to him in 1923, inviting him to join his staff, but circumstances at the time prevented this famous palaeontologist from taking up this offer. Romer later became Professor of Zoology at Harvard Museum and Director of the Museum of Comparative Zoology and famous for his several noted publications, including *Man and the Vertebrates*.<sup>108</sup> Although he had no means of anticipating it, the American arrived at Wits at a most significant moment. Dart was not alone—Dr Robert Broom who had deserted his medical practice temporarily in the Cape to hasten and view the newly-found virtues of the Taung child, stood beside him. On 10 July 1929, Dart had finally and skilfully manipulated disarticulation of the upper and lower jaws of the Taung skull—more than four years after he had commenced this delicate task.<sup>109</sup> (fig. 58). With Dart and Broom in full cry, the human features of the occlusal (biting) surfaces of the teeth—so long sought to view—were revealed to Romer. Broom expounded, 'there could no longer be the least doubt that *Australopithecus* is not at all closely allied to any anthropoid apes, but is very closely allied to man'.<sup>110</sup> Romer would declare in *Science*, his agreement.<sup>111</sup> Both Dart and Broom wrote articles on their new revelations of Taung's dentition.<sup>112</sup> While Dart awaited response to his dental casts and convinced more than ever now that his Taung infant was hominid,<sup>113</sup> he found himself engaged with the British Association for the Advancement of Science's ninety-seventh meeting held in South Africa from 22 July to 3 August 1929. Scientists numbering 535 arrived by ship and overland down from the highveld and the Rhodesias and beyond to attend the inaugural assemblage at Cape Town's City Hall. Noticeably missing amongst the

107 Jeffery K. McKee & Phillip V. Tobias, 'Taung stratigraphy and taphonomy : preliminary results based on the 1988-93 excavations', *S. Afr. J. Sci.*, vol. 90, no. 4, Apl. 1994, pp 233-35; P. V. Tobias & Graham Baker, 'Palaeo-anthropology in South Africa', *S. Afr. J. Sci.*, vol. 90, no. 4, Apl. 1994, p. 204.

108 Tobias, *Dart, Taung and the 'Missing Link'*, pp. 43-44.

109 Robert Broom, *Finding the Missing Link*, pp. 31-32; Dart with Craig, *Adventures with the Missing Link*, p. 53.

110 Broom, *Finding the Missing Link*, pp. 31-32.

111 Alfred Romer, Letters to the editor, *Science*, vol. LXX1, no. 1843, 9 May 1930.

112 Dart 'The dentition of *Australopithecus africanus*', *Folia Anat. Jap.*, vol. 12, Aug. 1934, pp.207-221; Broom, 'Note on the milk dentition of *Australopithecus*', *Pro. Zool. Soc. of London*, 1929, pp. 85-88.

113 David Pilbeam, *The Evolution of Man*, Thames & Hudson, London, 1970, p. 129.

throng were Dart's scientific adversaries in England. Various sections then set off in eight special trains for different locations, geologists to Pretoria, agriculturalists to Potchefstroom and anthropologists to Johannesburg, the latter attending City Hall for the first gathering there on 31 July.<sup>114</sup>

The conference held great interest for scientists and the public alike, South African laymen especially intrigued by archaeological and anthropological discoveries made in the country the previous year and extensively covered in the press. Amongst the scientists was Professor Leo Frobenius who the year before in exploring in various parts of Africa had collected valuable information on tribal traditions and their relationship to rock paintings and burial sites. L. S. B. Leakey, an Englishman born on Kabete Mission Station in Kenya in 1903, brought intriguing information about Stone Age culture in East Africa. Miss Gertrude Caton-Thompson, the famed British archaeologist, neat as ever in the perennial dark suit and felt hat she wore on digs as well as daily in town, and just arrived from studying ruins in Southern Rhodesia, spoke of her conclusions. Dr Percy Wagner listed ancient mine sites while Professor P. R. Kirby reported on musical instruments and their long history in Africa. Many unknown facts about the languages of the Bushman and the Hottentot were revealed by Professor L. F. Maingard.<sup>115</sup>

Other special highlights of the conference were exhibitions and other talks. Brother Otto displayed Bushman paintings. C. van Riet Lowe reported on fauna accompanying Middle Stone Age tools from Sheppard Island. Boskopoid human types from Tuinplaats on the Springbok Flats were described by Dr Robert Broom. The Reverend Neville Jones and associates outlined their excavation of Bambata Cave, Matopos Hills, while Miss Wilman covered Bushman rock paintings and Professor L. Cipriani enlightened on the Batonga of Northern Rhodesia. E. P. Mennell had facts on the Broken Hill Skull, while B. H. Dicke covered native languages and customs in the Northern Transvaal. Professor O. Abel discoursed on

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114 *British Association for the Advancement of Science Report of the Ninety-seventh Meeting, South Africa 1929 - July 22- Aug. 3*, Office of the British Association, London, 1930, vols. XXXV1, XXXV111.

115 *British Association for the Advancement of Science Report of the Ninety-seventh Meeting, South Africa 1929 - July 22-Aug.3, 1930*, vols. XXXV1, XXXV111, pp. 328, 334, 368-373; Dart, Foreword to Revil Mason's *Prehistory of the Transvaal*, Witwatersrand University Press, 1969, p. xix; the *Star*, 1, 3 Aug. 1928; *Rand Daily Mail*, 8 June, 10, 24 July 1929.



Degeneration of Species, with H. Balfour FRS highlighting South Africa's Contribution to Prehistoric Archaeology.<sup>116</sup>

The two members of Dart's academic staff and students contributed.<sup>117</sup> Dr Gordon Laing, senior lecturer, an Aberdeen graduate had joined Dart in 1923. He later became Medical Officer of Health for Johannesburg. Dr Lewis R. Shore who succeeded Laing in 1929 had been a personal friend to both Dart and Shellshear in London. He later succeeded Shellshear at Hong Kong University and left when the Japanese invaded the island in the Second World War.<sup>118</sup> Dr Gordon Laing with student J. H. Gear reported further on the Strandlooper skulls of Zitzikama. Gear additionally covered the 'Cranial form of Native Races of South Africa', as well as 'Fossil baboons from Taungs'.<sup>119</sup> James Henderson Sutherland Gear, later Emeritus Professor of Tropical Medicine, one of Dart's earliest students, was also one of the three Gear brothers who all made their mark in medicine. He graduated top of Medicine in 1929 with the Bronze Medal and in 1930 joined the South African Institute for Medical Research, staying until 1960. He served on World Health Organisation Committees and became one of the world's great researchers in Tropical Medicine. He was Director of the Poliomyelitis Foundation and 'missed by a whisker the kudos heaped on Jonas Salk, the American credited with the vaccine's discovery'. He died in Johannesburg in 1994, aged 89 years.<sup>120</sup>

Also at the Johannesburg conference Dr Lewis R. Shore covered 'Spinous Processes of the Cervical Vertebrae in Native Races in South Africa', while student J. Gillman's paper dealt with the 'Bush, Bantu and European Sacra'.<sup>121</sup> For twenty years Dr Joseph Gillman headed the histology section of the Anatomy Department and built up units in

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116 *British Association for the Advancement of Science Report of the Ninety-seventh Meeting, South Africa 1929 - July 22-Aug. 3*, vols XXXV1, XXXV111, 1930, pp. 368-73.

117 *ibid*, pp. 368-373.

118 Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 292; Tobias, 'Homage to Emeritus Professor Raymond Arthur Dart on his 75th Birthday 4 February 1968', *S. Afr. J. Sci.*, vol. 64, no. 2, Feb. 1968, p. 43.

119 *British Association for the Advancement of Science Report of the Ninety-seventh Meeting, South Africa 1919 - July 22-Aug. 3*, vols. XXXV1, XXXV111, 1930, p.p. 368-73.

120 *Arena*, n.d. Obituaries, pp. 31-32; *Sunday Times*, 24 July 1994, Obituary, Professor James Gear.

121 *BAAS Report of Ninety-seventh Meeting, South Africa 1919 - July 22 Aug. 3*, vols. XXXV1, XXXV111, 1930, pp. 368-73.

experimental medicine, biology and embryology, also nutritional studies, endocrine and experimental pathology investigations. He became Professor of Physiology, and served Wits for thirty-one years.<sup>122</sup> Two overseas scientists who would later share vital contributions with Dart, one a Scot, Alexander Galloway (soon to join Dart's staff) gave papers at the conference on several physical aspects of Fossil Bushmen and Bantu, the other, the famed Frenchman, the Abbé Henri Breuil, who reported on eastern Palaeolithic Art in Spain. All won high praise for their interesting presentations. Raymond Dart himself displayed and spoke on mammoth and other teeth and tools from the Vaal gravels. He was the first to describe and report on the discovery of fossil mammoths in South Africa in 1927. Additionally he arranged a display of his Taung skull and spoke on it.<sup>123</sup> Suffering the usual disappointment, with Taung now an almost non event, he wrote, 'I had hoped there would be great desire among the visitors to see the skull. Although some examined and made non-committal comments, it was obvious that few regarded it as anything of real importance in the evolutionary story'.<sup>124</sup>

Little doubt remained now in Dart's mind that *Australopithecus africanus* was an 'anomalous scientific orphan'.<sup>125</sup> The discovery of Peking Man's first molar tooth found in 1927, by Dr B Bohlin, identified and described by Davidson Black in 1928, and also in December 1928, the discovery of some lower jaw fragments with teeth, had completely overshadowed the significance of *Australopithecus* at the 1929 South African congress.<sup>126</sup> However, one among the throng of scientific delegates, the Abbé Henri Breuil had earlier at the Johannesburg congress examined the Taung skull and conceded to Dart the infant's reality and potential significance. His interests however at this period were centred on cave paintings, rock engravings and cultural objects generally from up and across Africa.<sup>127</sup> This famous archaeologist would later write to Dart:

It was in 1929 that I first met you and your Taungs baby,

122 Tobias, *Dart, Taung and the Missing Link*, 1984, p. 11.

123 *BAAS Ninety-seventh Meeting*, pp. 368-73, 367, 428; Dart, Foreword, to Revil Mason's, *Prehistory of the Transvaal*, Witwatersrand University Press, 1969, p. xix.

124 Dart with Craig, *Adventures with the Missing Link*, p. 54.

125 Dart, 'The Abbé Breuil and the Osteodontokeratic Culture', in *Miscelánea en homenaje al Abbe Henri Breuil (1877-1961)*, (ed.) E. Ripoll Perelló, Institute de Prehistoria Y Arqueologia, Barcelona, Monografias, vol. X1, 1964, p. 347.

126 *ibid.*

127 *ibid.*, p. 347.

*Australopithecus*, in your laboratory. Then you alone had the clarity of vision to diagnose it as an anthropoid form closer to mankind than any primate hitherto known...It is one of the greatest conquests of the human mind in this century. I am proud to have witnessed it and to have been, however modestly, associated with it.<sup>128</sup>

After the disappointing attitude of his colleagues for his discovery at the 1929 conference some good news came regarding his dental casts to lift his spirits from Dr W. K. Gregory, Curator of Comparative Anatomy at the American Museum of Natural History and Professor T. Adloff of Germany. Gregory confirmed the Taung specimen was not closely allied to the chimpanzee but was near to the ancestor of man. Adloff was emphatic in excluding *Australopithecus* from the anthropoids and claimed it as a genuine hominid.<sup>129</sup>

During the period since Dart's discovery of the Taung skull—the last five years of the 1920s—his researches had expanded considerably in addition to his favourite field, neuro-anatomy. So abundant proved his laboratory and field work, medical and educational teachings, archaeological and anthropological enquiries on subjects other than the Taung skull that he produced twenty-one research papers, all published in journals both overseas and in South Africa. In marked contrast to when he wrote about his Taung child, newspaper editors now more than ever both in southern Africa and notably overseas called upon him constantly for articles about new discoveries. Dart never failed to respond. A talent for lucid explanations of context with plenty of illustrations made him a firm favourite of the local public who responded to his call to bring him any interesting specimens they might find. Drawn as if magnetically to Dart, people reacted positively. Some of the greatest discoveries in South African Prehistory took place during this five year period.<sup>130</sup>

Dart had now completed his monograph on his Taung skull and was satisfied with his effort. Content also that he had moulded his Medical

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128 Henri Breuil, Foreword in Dart with Craig, *Adventures with the Missing Link*, pp. xxv, xxvi.

129 Dart with Craig, *Adventures with the Missing Link*, p. 54.

130 Dart, 'When Mammoths roamed the World : 12 000 year old teeth discovered', *Sunday Times*, 9 Sept. 1928; 'Stone Age South Africans', *Sunday Times*, 4 Nov. 1928; 'The Mammoth Hunters of the Vaal :First proof of South African Stone Age Theory', the *Star*, 8 Dec. 1928; 'Africa the home of the Elephant', *Rand Daily Mail*, 8 Apl. 1929; 'African Elephants of Remote Ages', *Star*, 1 Aug. 1929; 'Valuable link in the chain of outstanding discoveries : Professor Drennan's New Find: Specimen of World's most Primitive Race', *Cape Times*, 12 Oct. 1929.

School to a self-sufficient state to carry on in his absence. Now in early April 1930 he eagerly looked forward to his long-delayed sabbatical leave which included the bonus of joining the Italian Scientific Expedition as its Scientific Director. Under the command of Attilio Gatti, a tall and debonair Milanese (fig. 59), the Expedition was engaged in an important trip of scientific exploration from the Cape up through the Belgian Congo (later Zaire then Republic of the Congo) to Cairo. South Africa already left in its train, the Expedition had halted in Northern Rhodesia (now Zambia) where Dart planned to join the group at Mumbwa Cave, 162 kilometres northwest of Lusaka, in the first week in June.<sup>131</sup>

Dora his wife would not accompany her husband on the long, hard-going trek. Thoroughly immersed in her medical career at this time it had been agreed—with Dart's warm encouragement, he who often apologized for interrupting her studies at Cincinnati University—that Dora sail for England instead to work for her post graduate qualifications in medicine. Together the couple had drawn up an uncommon plan. Dora would take the Taung skull, carefully cushioned in its little black box, to England for Elliot Smith to have professional casts of it made. Dart's itinerary stood out in sharp contrast. Resolved to put the many tensions of recent years behind him, he would leave Johannesburg a few weeks later bound for the Rhodesias, take in the Zimbabwe Ruins and other sites, then travel on to Mumbwa Caves in Northern Rhodesia for their excavation. Then north to the Congo with its Pygmies and gorillas. Best of all from Dart's point of view as he peered ahead—a scientist heretofore bound to his laboratory and library for study—he would now enjoy the proper opportunity to examine wildest Africa in its actual habitat, learn a little about and within the secretive bush itself, a chance that came for investigators such as himself but once in a lifetime. After that, and according to the Expedition's plans, push on down the Nile to Cairo and, for Dart, England beyond—where Dora and the Taung child would be waiting. His hopes ran high for publication of his Taung Monograph and to convince his peers of the rightfulness of his claims.<sup>132</sup>

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131 Kay. S Smithford, notes in letter to F. Wheelhouse 1 July 1993.

132 Dart with Craig, *Adventure with the Missing Link*, pp. 54-56.

## CHAPTER 7

### TRAVERSING AFRICA

By 1930, six years after Dart's famous though rejected Taung skull discovery in South Africa reasons for this can be seen in the prevention of it by the most powerful scientific hierarchy of the day. Overall these rejections were based upon adherence by members of this group to their own theories of a large brain as a forerunner in the evolution of humans and seen by them to be displayed in the Piltdown skull of Sussex, England, and in the Pithecanthropine and Sinanthropine skulls of Java and China respectively. Further they were strong in their conviction of the orient as the place where the seed of humanity had germinated and certainly not in South Africa. Other reasons for rejection of Dart's discovery and assessment of his Taung skull can be seen in establishment resentment of his failing to submit to protocol and send his new discovery to London for the experts there to appraise and publish. An additional reason for rejection can be seen in audacity on Dart's part, as an unknown anatomist, of his prompt description and evaluation of the Taung skull through the prestigious journal *Nature*.

By 1930 Dart still stood firm on his convictions of the Taung skull, and in the face of such powerful opposition courageously execute an extensive monograph on it in further support of his earlier convictions. It is seen that during the period from 1924 to 1930 Dart's energy and innovations in his endeavours in building up his anatomy department and medical school met with success, as did his additional fields of research, that his organisational skills were recognised by his presidency of the South African Association for the Advancement of Science as were also his very commendable public relations skills. It is seen that in achieving such activities by the postponement for a year of his sabbatical leave then, allowed Dart to traverse Africa in scientific enquiry with the Italian Scientific Expedition, after which he intended confronting his English adversaries over acceptance of his Taung skull evaluations.

Dart had gladly accepted Commander Gatti's offer to join his Italian Scientific Expedition as Scientific Director,<sup>1</sup> commenting that he 'could not

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1 *Natal Witness*, 21 Aug. 1930.

refuse the opportunity to see more of this vast continent', and when in England, 'the chance to confound my critics would come when we met again in London'.<sup>2</sup> First investigations would be made at two sites in Northern Rhodesia (Now Zambia) at Mumbwa and at Chowa with the objective to try and bridge the huge gap in archaeological knowledge of South Africa and the territory of Southern Rhodesia (now Zimbabwe) and Kenya. Excavations had been made in several places at Matopos and in Kenya but no accurate archaeological survey of any sites between these two far removed points had been carried out.<sup>3</sup> Might this Expedition provide information of more archaeological sites, perhaps discover more human remains and artefacts of past ages, even provide answers to some of the vexing problems of earlier human habitation of the region?

On 24 May 1930 with full measure of enthusiasm Dart departed by train from Johannesburg for Northern Rhodesia<sup>4</sup> there to join the Italian Scientific Expedition which had left some weeks earlier by road in its well-equipped convoy of vehicles and men. Travelling via the dusty pot-holed narrow Great North Road the Expedition members had reached the town of Broken Hill (now Kabwe) in late May. On arrival, Gatti, referring to the primitive skull found there in 1921, advised the local population, he had come to "look for Rhodesian Man's mate".<sup>5</sup>

Never one to pass up an opportunity to visit historical sites, meet associates in archaeological and medical fields, Dart's first stop-over was the town of Bulawayo (original kraal site of Lobengula, chief of the Ndebele in Southern Rhodesia, and known as the 'place of slaughter' since invading Zulus defeated the Shona people. In 1888 Cecil Rhodes, through subterfuge use of missionaries, had gained from Chief Lobengula huge tracts of land for mineral rights for The British South Africa Company, and obtained a Charter with authorised rights of its use from the British Government. Warfare between native tribes and the use of troops by Rhodes brought the elimination of Chief Lobengula, and the usurping of his land and people towards a greater colonial expansion for Great Britain<sup>6</sup>.

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2 Dart with Craig, *Adventures with the Missing Link*, pp. 54-55.

3 Dart with Nino del Grande, 'The Ancient Iron-Smelting Cavern at Mumbwa', *Transactions of the Royal Society of South Africa*, vol. X1X, part 1V, 1931, p. 380.

4 Dart with Craig, *Adventures with the Missing Link*, p. 55.

5 Kathaleen Stevens Rukavina, *Jungle Pathfinder, Central Africa's Most Fabulous Adventurer*, Exposition Press, New York, 1951, in Introduction, p. 21.

6 Roland Oliver & J. D. Fage, *A Short History of Africa*, Penguin Books,

While in Bulawayo, Dart enjoyed viewing the rich Rhodesiana collection in the National Museum. By car he visited the nearby Khami Ruins, Fort Victoria (now Masvingo) and seventeen miles to the southeast, those mystical grey stone edifices, the Great Zimbabwe Ruins.<sup>7</sup> In 1868 the first Europeans to visit them were Adam Renders, an American and George 'Elephant' Phillips an Englishman, both hunters, who in 1870 directed to them the German geologist Carl Mauch. Mauch became the first to record there the 'roofless' houses built with hand-trimmed granite blocks, held together without mortar.<sup>8</sup>

Zimbabwe had been named by the advancing Bantu to mean 'house of stone'. To date these ruins had remained southern Africa's greatest and much argued-over puzzle—who built Zimbabwe and when? In 1929 at the British Association for the Advancement of Science meeting in Johannesburg, they had been the subject of a scientific clash between Dart and the indomitable and famed British archaeologist, Miss Gertrude Caton-Thompson, who had recently excavated them. They disagreed as to which people may have previously erected them.<sup>9</sup> Many riddles waited for archaeologists to solve, visitors fell under the spell of this ancient place which encompassed gold workings, cave dwellings and boundary walls and fired speculation that gold mines nearby were used to fashion ornaments in King Solomon's temple.

While Miss Caton-Thompson held to the theory that the Bantu people had built Zimbabwe, others subscribed to a range of views. James Theodore Bent, for example in 1891 rendered an argument in favour of the Persian theory which suggest Zimbabwe's founding as some hundred of years before the advent of the Bantu. David Randall-MacIver wrote in 1906 of *Medieval Rhodesia*, dispelled ideas by others of traders from afar, even from overseas might have played a role in Zimbabwe.<sup>10</sup>

Twenty-seven miles from Bulawayo, Dart would also view in the rugged grandeur of the Matopos Hills, the spectacle of the 'World's View',

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Harmondsworth, 1962, pp. 188, 192-3; *Encyclopaedia Britannica*, 15th edn., 1994, vol. 1, pp. 616.

7 Kay S. Smithford, Spartanburg, SC, USA, letter to F. Wheelhouse, 28 Oct. 1996.

8 *Encyclopaedia Britannica*, 15th edn., 1994, vol. 12, pp. 916-17.

9 Dart with Craig, *Adventures with the Missing Link*, p. 62.

10 Dart with Craig, *Adventures with the Missing Link*, p. 64; *E. Britannica*, vol. 2, p. 209 and vol. 9, p. 933.

the named and chosen grave site selected by Cecil Rhodes among nature's magnificent setting of giant spherical boulders and jagged cliffs.<sup>11</sup> History in part records Rhodes, born 1853, the son of an English vicar, settled in South Africa late last century, made a fortune from amalgamation of diamond mines at Kimberley, introduced some rail systems in Africa, became Prime Minister of the Cape from 1890-1896, and, who died there in 1902 willing his fortune in Trust to Oxford University (where he graduated in 1881) for Rhodes Scholarships for students from the colonies and some other countries.<sup>12</sup>

Next by rail and a legacy of Rhodes, Dart in a day-and-a-half stop-over experienced the magnificent sight of Victoria Falls (Mosi-ao-Tunya), the smoke that thunders. At Victoria Falls, twice as wide and twice as deep as Niagara Falls, the Zambesi River plunges spectacularly 122 metres into a narrow rock-walled chasm, emitting plumes of white clouds mist and spray. Through this narrow gorge flows the entire volume of the Zambesi River after which it is partially impeded by the Kariba Dam (completed in 1958) and near the Mozambique border the Cabora Bassa Dam before ending its 3,500-kilometre journey in a delta outlet to the Indian Ocean.<sup>13</sup> Next Dart entrained for Lusaka for his final destination of this particular leg of his trans-Africa trip. Climbing out of the Zimbabwe Valley to 1.2 kilometre, the train headed through mixed timber and ant-hill country over the Kafue River through big game territory.

Disembarking at Lusaka on 7 June 1930 Dart farewelled his travelling companion, Dr Ferguson, Wits-trained in Tropical Medicine, Public Health and Hygiene, now to become the Nkana Mine doctor in the region.<sup>14</sup> Greeted as Il Professore (and known as such from then on) by Commander Gatti and his second in command, Nino del Grande, Dart found his enthusiasm to begin work at Mumbwa tempered first by a mandatory social event and secondly, after it, a trip to Broken Hill (now Kabwe). At the social event on a farm a few miles from Lusaka, the owner's daughter celebrated her twenty-first birthday, at which, to those gathered, Dart's reputation as a famous scientist and his Taung discovery were already known. Guests

11 C. Carlyle-Gall, (ed.), *Six Thousand Miles of Sunshine Travel over the South African Railways*, South African Railways and Harbours, Johannesburg, 1937, p. 41.

12 Roland Oliver & J. D. Fage, *A Short History of Africa*, Penguin, Harmondsworth, 1962, pp. 170, 188, 192-93; *E. Britannica*, vol. 10, p. 25.

13 *E. Britannica*, vol. 12, pp. 352, 889-90.

14 Dart, 'Through Africa with the Italian Expedition', the *Leech*, May 1931, p. 28.



delighted not only in his stories of his discovery but in his participation in party fun, including stalking about the grounds with a huge elephant gun. Next Gatti's maroon buick with Dart aboard arrived in Broken Hill, there to be hosted by Royal Hillman Stevens and his wife. Stevens, General Manager of the Rhodesian Broken Hill Development Company already hosting and assisting Gatti's party with equipment and laboratory work during excavations, now showed Dart the area of his mine from where the famous *Homo rhodesiensis* (now *Homo sapiens rhodesiensis*) skull had been extracted in 1921.<sup>15</sup>

As early as 1905 mining operations had revealed mineralized bones and implements. Subsequently hundreds of tons of animal bones had gone into the smelter; only by 1921 were the first human bones found. Before mining operations had begun a hill or kopje nearly 18 metres high existed, and tunnelled from west to east by a natural cave 36 kilometres long, its walls and roof composed of dolomite silicate and zinc. Piled 3.6 metres high from the floor were masses of mineralized bone. It was aptly named the Bone Cave. After the whole hill was demolished, excavations continued to 27 metres below the surface and at the blind end of the cave human bones were found. After the blasting charge dust settled, a bewildered miner named Zwiggellar is said to have told how he saw a skull grinning at him through the gloom from a cleft in the rock. Mine metallurgist, William L. Harris quickly photographed these remains—practically a whole skeleton enclosed in a metallic cast over the surface of the body. Tragically, however, before this skeleton could be retrieved it was destroyed by Negro miners overcome with fear and superstition. To science was lost this unique record of bodily form and the vital proportions of an extinct type of mankind. Fortunately Harris communicated his account and photos of Rhodesian Man to the *Sunday Times* in Johannesburg, which newspaper published these on 25 September 1921. In total over time the bones of this specimen found were an almost complete skull, though no lower jaw, a sacral bone and tibia and two ends of a femur, also a small fragment of the upper jaw of another individual of the same type. Dart it will be recalled viewed the original skull of Rhodesian Man sent to Arthur Smith Woodward at the British Museum and exhibited by him in 1922.<sup>16</sup> (fig. 60).

15 Kay S. Smithford letter to Frances Wheelhouse, 1 July 1993.

16 G. Elliot Smith, *The Evolution of Man Essays*, Oxford University Press, 1923, pp. 71-73, citing information from William L. Harris's article in the *Sunday Times*,

Dart advises that it was not until 1925 after Dr Hrdlička from the United States of America 'had visited Broken Hill to collect evidence from the men who were employed at the mine when the skull was discovered and had presented his findings, that the real significance of Rhodesian Man was appreciated by scientists'.<sup>17</sup> According to Professor W. W. Howells, the eminent American palaeo-anthropologist, this decidedly archaic human was later found to have reached from the Cape of Good Hope to Ethiopia, though Rhodesian Man was the first one found. These forms Howells mentions succeeded the earlier form of *Homo erectus* (earlier named *Pithecanthropus* and *Pekinensis* from Java and China) and were considered to be barely out of the *erectus* class and that today the Broken Hill specimen of Rhodesian Man carries the name *Homo sapiens rhodesiensis*.<sup>18</sup> Its age is believed to be about 200 000 years old.<sup>19</sup> Some scientists believe it to be even 400 000 years old.<sup>20</sup>

Viewing the site of the discovery of the Broken Hill or Rhodesian Man in 1930 Raymond Dart contemplated he might find another such skeleton at Mumbwa where he was now headed and 208 kilometres southwest of Broken Hill, approached along the military road 128 kilometres direct from the rail head at Chisamba.<sup>21</sup>

The Italian Scientific Expedition had first set up camp five kilometres from Mumbwa Boma near Livingstone Rocks and had located more than a dozen caves in this region, some of which bore indication of earlier human habitation. However the Mumbwa Caves were selected for detailed exploration and camp was set up about three kilometres west of the Magistracy centre at Mumbwa on the road to Lubungo on the Kafue River. The camp itself comprised six tents and Gatti's oblong-shaped thatched mud house with verandah, all set in a semi-circle in a large clearing, from which the centred flagpole flew the Expedition's banner - two black cat rampants

Johannesburg, 25 Sept. 1921; Kay Smithford letter to F. Wheelhouse 1 July 1993.

17 Dart with Craig, *Adventures with the Missing Link*, p. 22.

18 W. W. Howells, *Getting Here : The Story of Human Evolution*, The Compass Press, Washington, 1993, pp. 130-32.

19 Chris Stringer, The Natural History Museum in England letter to Kay S. Smithford, Spartanburg, SC. USA, 1 May 1995, 'We are attempting to date the site more accurately at present, but the consensus opinion is that it is late Middle Pleistocene, c. 200 000 years old'.

20 *Encyclopaedia Britannica*, 1994, vol. 18, pp. 826-36.

21 R. A. Dart, 'Prehistoric Man in N. Rhodesia', *Star* Johannesburg, 22 June 1930.

on a scarlet background. Mumbwa a few kilometres from the camp site was a tiny remote settlement, a population of only eight, comprising the families of the magistrate and his assistant and a storekeeper. Mail arrived there once a week by motor truck from Lusaka and was despatched by native foot-runner to Portuguese West Africa (now Angola) whose journey took anything from three weeks to two months. In the vicinity of Mumbwa, game roamed in its luxuriant tall grass and scattered brush. In rolling parklands Dart thought the area was ideal for early man to have lived.<sup>22</sup>

Near to the camp, red earth surrounded two spectacular limestone bluffs of scarred black-rock of Cambrian or greater age which reached upwards to 24 metres in height and outcropped over a line running northwest to southeast over a distance of more than 365 metres. (fig. 61). These contorted limestone bluffs had tilted vertically and had become completely twisted upon themselves, due possibly to volcanic action. In weathering over aeons they had become riddled with funnels, chimneys and huge caves, the latter now filled with falling limestone blocks within, also with soil-wash and debris. Of the three caves inspected, the largest one in the northern bluff was selected for excavation. Mr Farquhar B. Macrae, then Native Commissioner from Northern Rhodesia had, when Resident Magistrate at Mumbwa some years earlier, visited these caves and dug a trial pit at the front of this large cave, and found quartz implements in great quantity. Now for the Italian Expedition which re-opened this narrow trench a new African mystery presented itself. Would traces of prehistoric man in Africa be located there with tools and indications of lifestyle? Already the barest information was available for correlating Southern African archaeology with European archaeology and for determining the ultimate sources of stone implement manufacture characteristic of the two continents. Might this excavation provide some further answers to existing riddles? Expectation ran high, but even the Expedition scientists were not expecting what they found.<sup>23</sup> (fig. 69).

Expanding Macrae's trial pit, trenches longitudinally and transversely were dug at the back and front of the cave some 18 metres long and down to

22 'Prehistoric Man in N. Rhodesia: Effort to Bridge a Gap', *Star*, 22 June 1930; Dart with Nino del Grande, 'Ancient Iron-Smelting Cavern at Mumbwa', *Transactions of the Royal Society of South Africa*, vol. XIX, part 1V, 1931, pp. 380-81.

23 Raymond Dart, 'The Remote Antiquity of Man in Rhodesia', *Rand Daily Mail*, Johannesburg, 22 Sept. 1930.

7.6 metres from which 260 tons of excavated material were carefully sieved. This yielded quartz implements and flakes in great quantity. As the caves were only of limestone these implements had obviously been brought there by human agency. The arduous work continued—a connecting eastern passage was opened and revealed the cave extended on the western face over 30 metres and through to the eastern wall to about 18 metres. Surprisingly along the exterior western side of the cave lay huge blocks of compacted mixed material. (fig. 62). Hundreds more tons of earth were removed with the aid of twenty Ila native workers, to rock bottom at 7.6 metres from the existing floor level and 10 metres from the roof above it to rock bottom. Again the material was carefully sieved. This cavern not only yielded sound proof of human existence there over 25 000 years ago, but also the history of tool advance and weather patterns over aeons of time.<sup>24</sup>

In the extreme lowest level, 2 metres above bedrock this soil layer of friable, sandy, loamy-blackish earth was highly charged with innumerable fine fragments of bone with coarsely-broken pieces of quartzites and quartz, animal bones and implements of chipped stones of a crude form of Acheulian type. Although no human bones were recovered from this ancient stratum, their tools revealed their habitation there showing the profound antiquity of man in Northern Rhodesia. Dart thought it may well be that Rhodesian Man belonged to that remote past.<sup>25</sup>

A great change in the climate was seen to have occurred some eight or ten thousand years later by heavy flooding which made the cavern uninhabitable and shown by the deposition of just over 2 metres of clayish mud completely sterile of any bones or tools. The next 0.3 to 0.6 metre layer showed that towards the end of these supposed pluvial times the cave once more became habitable—about 6,000 to 7,000 years ago. Most interesting to the scientists was that this layer revealed these people were now using an improved technique for tool-making, that of Moustierian form, though they were still making use of the old Acheulian tool-making techniques. This occupation lasted 2,000 years when another type of human came to live

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24 Dart with Nino del Grande 'Ancient Iron-Smelting Cavern at Mumbwa', *Transactions of the Royal Society of South Africa*, vol. X1X, part 1V, 1931, pp. 379-427.

25 Dart, 'The Remote Antiquity of Man in Rhodesia', *Rand Daily Mail*, 22 Sept. 1930.

there and utilize their labour.<sup>26</sup> (fig. 63).

The scientists found these new people were metal-gatherers who made use of quartz which they imported for smelting iron in furnaces they built in the cavern. It was seen that introduced to quartz, the palaeolithic culture people also began making tools in this material as the new-comers were doing, with the earlier people still making tools also from chipping shale, chert and ferruginous quartz. Proof of co-habitation is seen in the located beehive burial tombs, bones and tools of the earlier and co-habiting occupants, and the constructed furnaces, ash heaps and advanced tools also shells, beads, specularite which the new-comers introduced.<sup>27</sup> (figs. 64-69).

Proof of the new-comers' iron smelting activities was established by Mr Royal H. Stevens, a metallurgist of international reputation and General Manager of the Rhodesian Broken Hill Development Company by his analysis of the material associated with the furnace, a brief extract from which is quoted below. A sample of iron ore provided showed an iron content of 68 per cent, the composition of the ore disclosed as Haematite: 97.2 per cent and Silica: 2.2 per cent. His analysis provided additional vital evidence of the primitive method used by these metal gatherers of iron-making of the earlier or primitive, precious metal, phosphoric or bone-smelting phase. Royal H. Stevens in part notes:

It is evident that the very earliest method of preparing iron was the one practised, because bone, a phosphate of lime, was used as the source of lime to form slag with quartz. It is well known that this was the most ancient form of metallurgical practice for recovering iron. This is in sharp contrast with the relatively modern method of the Bantu for preparing iron. They smelt in shaft furnaces in ant-heaps, and in their practice the iron ore is mixed with charcoal, but no definite steps were taken to produce an abundant quantity of slag with fluxes'.<sup>28</sup>

An ancient iron mine site at Lusaka may have been the source of the new-comers' iron. Mumbwa Caves had shown the oldest iron foundry of Southern Africa to date being utilized between 2,000-4,000 years BC. Other

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26 Dart with Nino del Grande, 'The Ancient Iron-Smelting Cavern at Mumbwa', *Transactions of the Royal Society of South Africa*, vol. XIX, part IV, 1931, pp. 379-427.

27 *ibid.*

28 *ibid.*, R. H. Stevens report partly quoted here from pp. 391-92.

treasures were extracted in this furnace layer—pottery made by the iron smelters some 2,000-4,000 years BC. As well there were 'Bushman' digging stones and a haematite (ironstone) instrument used to make these and three neolithic axes or celts, the first time polished stone axes had been found in a Southern African cave deposit. To Dart it was clear the metal gatherers taught the earlier inhabitants to make from quartz the arrow points found. This was a matter of great significance to the scientists which answered for them the question as to why the Bushman, when Europeans came to South Africa, were using digging stones and delicately fashioned arrow heads instead of crude, massive coarsely chipped stone-axes.<sup>29</sup>

At Mumbwa cavern then archaeological treasures were unearthed in the carefully worked several strata in the form of stone burial tombs, ash, refuse heaps and furnace hearth, tools, shell pendants, pottery and importantly osseous remains and teeth of sixteen early humans and also animal remains. (figs. 64-66). To Professor Dart who found the cultural objects located in the smelting cavern exciting and interesting, the most precious documents of all were the skeletal and dental fragments of the earliest inhabitants. Who were they?

Dart advised that from the bone fragments of at least sixteen individuals which were recovered, ten represented Bushmen while the other five portrayed an admixture with more ancient and primitive types such as those designated Boskopoid and Australoid (see above p. 149). These mixed types were found in greater frequency at the lower levels of the cavern, but occasionally the primitive type emerged in the higher levels. From earlier work done by Dart and his colleagues it seemed apparent that this big-boned, then known as the Boskop type was widely dispersed north of the Zambesi in pre-Bushman times and that there, as in Southern Africa, they became freely hybridised with the more delicately constructed Bushman.<sup>30</sup>

Who then were the master smelters in the Mumbwa cavern, who produced iron ingots so precious, while they themselves used only stone tools, taking the ingots to fashion elsewhere perhaps for their own nobility? Bushman paintings reveal strangers wearing Babylonian-Phrygian headgear

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29 Dart, 'The Remote Antiquity of Man in Rhodesia', *Rand Daily Mail*, 22 Sept. 1930; Dart with Nino del Grande, 'The Ancient Iron-Smelting Cavern at Mumbwa', *Transactions of the Royal Society of South Africa*, vol. XIX, part 1V, 1931, p. 394.

30 *ibid.*, pp. 426-27.

armed with swords and bows while the depicted Bushman had no weapons other than stone. Professor Dart mentions:

an adventurous group of people were trafficking down the Eastern African Coast and up the great water-highway of the Zambesi River; that in those early days, several thousand years before Christ, iron was so precious that their own axes were of stone and that they and their labourers fabricated implements from quartz and bone; and that in this environment the earliest metallurgical enterprise in Southern Africa was initiated.<sup>31</sup>

To Dart it was clear that most remains at Mumbwa cavern were Bushman and that these metal gathering strangers left their tell-tale types of advanced tools and other objects there, and also elsewhere in Southern Africa where numerous ancient mine sites occurred with similar association and noted by other researchers. Dart estimated that habitation by these newer people either ceased before or at the time of the advent of the Bantu hoe-and-axe and agricultural culture towards the beginning of the Christian era or shortly afterwards. To these scientists the Mumbwa cavern demonstrated:

the bizarre super-imposition of a Late Stone Age and even neolithic metal-gathering culture upon an old palaeolithic South Africa—which it demonstrates—presents us with the key that was required for the unlocking of the mysterious complex presented by the recent Stone Age phenomena in South Africa.

In doing so it emphasises the geological recency of the advent of these neo-anthropoc cultures in South Africa. They were foreign to this soil; they were brought here after their dominant features were evolved elsewhere. The site of their emergence is unknown, but presumably, from the Capsian affinities, it was somewhere along the Meditterrean littoral.<sup>32</sup>

Three months of strenuous work at Mumbwa cavern were most rewarding and added greatly to the knowledge of Southern Africa's human prehistory. Before leaving Mumbwa cavern the approaches to this historic site were made safe, barricades and ladders were installed to allow visitors to view and read this rich history of Africa's past. The ancient furnace site was left in position together with records of the Expedition's work there for future archaeologists to check the truth of their work and to add further to

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31 *ibid.*, p. 424.

32 *ibid.*, p. 422.

this work and other untouched caves nearby.<sup>33</sup>

Moving on to their new encampment near to Chowa manganese mine 241 kilometres northeast of Mumbwa and 13 kilometres east from Broken Hill, there the Expedition had been enticed by the report of the curious nature of the deposit found when mining commenced. Here a new mystery presented itself which the scientists were keen to investigate.<sup>34</sup>

The mine lode had been accidentally discovered in 1925 by geologist Frederick Bush, who, noticing several protruding 15 centimetre manganese outcrops, staked his claim. On assay of his specimens, the Rhodesian Broken Hill Development Company purchased his claim and engaged him in charge of mining operations which began in 1927. (fig. 70). What had intrigued Bush in his removal of black soil and vegetation overlay from the claim over 274 metres long and 36 metres wide, was that he found at depths of 1, 3 and 4.5 metres above the main manganese lode, an abundance of fractured manganese blocks. Some were immense, some seemingly trimmed as palaeoliths (early stone tools). While these captured his interest Bush was further surprised by not finding in the soil any sign of human habitation or fragments of pottery, bone or metal. He did however find rough pieces of quartz, schist and sandstone different from the formation in which they were found. It was obvious to Bush that after working the area, the rubble had been tossed into the trenches after the accessible lode of mineral had been procured. Already for Bush in three years this rubble had rendered 3,000 tons of manganese for the smelter, also about 250 tons of small implements. Previously he had invited archaeologists to examine the site in the hope that some light might be thrown on these mystery contents, though without success. His challenge for this quest now lay before Raymond Dart and his colleagues.<sup>35</sup>

Assisted by the mining company, Dart and his colleagues over several weeks set out a programme of special excavations and a search of the surrounding terrain for possible clues. Dart noted, 'Not a sign of human

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33 Dart, 'The Remote Antiquity of Man in Rhodesia', *Rand Daily Mail*, 22 Sept. 1930.

34 Dart, 'The Discovery of a Stone Age Manganese Mine at Chowa, Northern Rhodesia', *Trans. Roy. Soc. S. Afr.*, vol. 22, 1934, pp. 55-60; Dart, 'Prehistoric Manganese Mines at Broken Hill', *Rand Daily Mail*, Johannesburg, 13 Oct. 1930.

35 Dart, 'The Discovery of a Stone Age Manganese Mine at Chowa, Northern Rhodesia', *Trans. Roy. Soc. S. Afr.*, vol. 22, 1934, pp. 55-60; Dart, 'Prehistoric Manganese Mines at Broken Hill', *Rand Daily Mail*, 13 Oct. 1930.



habitation, not a sign or fragment of pottery or bone or metal had been found at Chowa, but the crudely shaped palaeoliths in psilomelane—the like of which we had not seen before—would not let us rest'.<sup>36</sup>

Their search was rewarded by the discovery of the entire contents of a typical section of material overlying the manganese (psilomelane) load to a depth of 4.5 metres. Their quarry of implements extracted from the loose earth yielded numerous large and small cuboidal and rounded hammers made of psilomelane, quartz, quartzite, thousands of flakes of psilomelane, large hand axes in the same material and quartz tools indistinguishable from palaeolithic implements. There was little doubt in Dart's mind the tools had been intentionally fashioned and used. It became obvious to him also that the excavations had not been made in order to secure psilomelane for their palaeoliths. That so much manganese had been left behind in the rubble meant to Dart that the psilomelane itself was not the principal object of mining. Had it been precious in itself Dart theorized, the miners would not have fashioned it into crude hammers and implements as if the making of stone implements had been their object this proved curious as 'they had mined thousands of tons of material which could have been turned into millions of hand-axes and other lethal weapons'.<sup>37</sup> What then was the quest of these ancient miners?

Existence of small hammers which would have been useless for breaking up big masses of ore and the small chisel-like flakes of psilomelane, quartzite plates or millstones for grinding down material into powder, offered a clue to Dart; stone mullers and grinders of that type being a regular concomitant of ancient mining, characteristic in South Africa. To Dart that these were used for grinding manganese at Chowa was proven with his discovery of some powdered manganese still adhering to the polished faces of the grinding slabs. To Dart purity of the ground substance had been achieved by use of grinding stones composed of fine-grained white quartzite. What then was the substance ground? Analysis of the milled powder by Royal H. Stevens, general manager of the Rhodesia Broken Hill Development Company (fig. 71), showed a manganese product of greater purity had been sought by the ancient miners, that of pyrolusite or manganese dioxide ( $MnO_2$ ). Thus the small hammers and small chisel-like

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36 Dart, 'Prehistoric Manganese Mines at Broken Hill', *Rand Daily Mail*, 13 Oct. 1930.  
37 *ibid.*

flakes of psilomelane now indicated their service was for detaching or trimming away crusts, coatings or lenses of pyrolusite, an alteration product of the manganese ore which had formed under highly oxidising conditions as a light grey to black, metallic, moderately heavy substance.<sup>38</sup>

Today manganese itself has many uses in the extraction of metals from ores, in hardening iron and bronze and in the dyeing industry. It is one of the toughest of all ores. The investigators at Chowa in 1930 found that it took ten to twelve blows of a modern pick to dislodge even a small fragment from the matrix. That being so they realised that for the ancient miners, 'This ancient work was all sheer crude hard labour with stone in stone'.<sup>39</sup> Dart pointed out that the particular importance of the presence of manganese in Northern Rhodesia was that mining it was absolutely unknown to the Bantu. He was certain that the people who worked this manganese mine at Chowa, the first known to science to that date, were a folk using extensive metallurgical skills of a kind different to those of the Bantu, a travelling people who knew an important market for this curious mineral overseas. Dart points out that primitive as were the methods used by Neolithic (New Stone Age - when tools were shaped by polishing and grinding), people in Western Europe who made use of galleries, fire for splitting stone, deerhorn picks, perforated stone axes, lamps and ventilated shafts, by comparison, those in Africa were far more crude.<sup>40</sup> At Chowa there were found only open trench use, the use of stone and hand axes, wedges and picks. There were only sufficient traces of rubbing technique in a few perforated round stones, a ground axe and some milling stones to recognise the rudiments of typical neolithic polished stone technique. There was a glimpse of the people's acquaintance with hafting of stone axes (handle attachment) which would have relieved to some extent the crudity of pounding by means of massive stone hammers with elementary stone choppers. No trace of any metallic implement was found at Chowa, and no use of fire for splitting rock. From this information gathered at Chowa in the rubble, Dart became persuaded, 'that the Palaeolithic-Neolithic mining at

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38 Dart., 'The Discovery of a Stone Age Manganese Mine at Chowa, Northern Rhodesia', *Trans. Roy. Soc. S. Afr.*, vol. 22, 1934, pp. 56, 64; *Encyclopaedia Britannica*, 15th edn. vol. 9. 1994, p. 826.

39 Dart, 'The Discovery of a Stone Age Manganese Mine at Chowa, Northern Rhodesia', *Trans. Roy. Soc. S. Afr.*, vol. 22, 1934, pp. 69-70.

40 Dart, 'The Discovery of a Stone Age Manganese Mine at Chowa, Northern Rhodesia', *Trans. Roy. Soc. S. Afr.*, vol. 22, 1934, pp. 69-70; Dart, 'Prehistoric Manganese Mines at Broken Hill', *Rand Daily Mail*, 13 Oct. 1930.

Chowa is more ancient than that of Neolithic Western Europe'.<sup>41</sup>

Thus far the items gathered provided a complete picture of the process of mining adopted at Chowa. Yet to be solved was the habitation site of these early miners, who might they have been, when was Chowa mined and for what purpose was the ground pyrolusite gained?

In an endeavour to determine the living place of the early miners, a thorough search was undertaken by Nino del Grande in the quartzite rich Kafulamadzi Hills three miles north of Chowa. This survey yielded dividends in the form of half a dozen overhanging rock shelters on the precipitous terrain from which in earth-depths and scatterings around their surrounds were retrieved hammers, flakes, psilomelane palaeolithic implements from Chowa mixed with quartz implements, some pottery, bone and iron ore. As the psilomelane artefacts, which possibly were used for domestic use, could not have come from the quartzite hills themselves, it was obvious to the scientists they must have been transported from Chowa when mining was in progress. Now the two sites could be linked. White and crystalline quartz flakes were found in their infinitude which clearly demonstrated familiarity with the Late Stone Age technique by those who had prepared them. Whereas the scientists had not found at Chowa any clear evidence of trimmed and flaked quartz, Kafulamadzi now supplied this Late Stone Age facet of the picture. This solved for them the presence in the mine rubble of broken perforated stones, broken mullers and grinders, a polished stone axe and to them only fragmentary but unquestionable evidence of neolith (or polished stone) culture as precisely the same character as was found by them in the "furnace stratum" of the iron-smelting cavern at Mumbwa. Dart related:

Taking the evidence of Chowa and Kafulamadzi (which are linked by the common presence of psilomelane) together, it is apparent that the manganese mining community were predominantly Stone Age people but utilising simultaneously the cultural techniques of the Early, the Late and even the New Stone Ages in exactly the same fashion as and apparently simultaneously with the iron-smelters at Mumbwa.<sup>42</sup>

Taking the combined evidence of Chowa-Kafulamadzi and of the similarity of those tools with those at Mumbwa, Dart had little doubt that the

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41 *ibid.*, p. 69.

42 *ibid.*, p. 61.

local inhabitants of Northern Rhodesia were habitually making these primitive types of Early Stone Age implements when the metal seekers and manganese gatherers came amongst them. For Dart the two most important types of implements found in the Chowa rubble were the perforated round stone (so-called "Bushman" digging stone) and a neolithic or polished stone axe. By the presence of these two types of objects there and also at Mumbwa it became obvious to Dart that it was a neolithic people familiar with the polishing of stone to form implements that brought the arts of metal and mineral gathering to a palaeolithic Bushman, and that they had taught these skills to the Bushman long before the coming of the European and the Bantu.<sup>43</sup>

At the time of investigations the neolithic axe was of great archaeological rarity in South Africa. Only at Mumbwa had they been found in a cave exploration, and only at Chowa in the ancient mine rubble filling. However, they had been found near Bushman paintings at Grahamstown and on the ground surface at Piquetberg in the Cape Province, at an ancient working at Penhalonga in Southern Rhodesia, below 10 metres of alluvial drift at Katanga in the Congo and also on the open ground in North-Eastern Rhodesia also in the Congo, and near Victoria Nyanza. Of these findings Dart wrote, 'These objects sparsely mark the trail of the neolithic metal-gatherer, who seems to have exploited the whole East African coast and to have penetrated all the main eastern waterways of the continent.'<sup>44</sup>

As to the age of Chowa, this was not easy for the scientists to determine without clear stratigraphical layers. Dart would determine this age on the close resemblance between the stone implements of Chowa and Mumbwa and that as the furnace stratum deposit at Mumbwa indicated an age of 2,000 and possibly 4,000 years BC, he attributed Chowa to be of corresponding age. In doing so he advised that this date:

Would render more easily comprehensible the Rooiberg (Transvaal) association of stone implements with copper, tin, and bronze enterprise described by the late Dr Percy Wagner, if they had been conducted by an ancient civilised people such as the Egyptians or Sumerians. For these people were then still in a state of mixed (stone and metal) culture, but were none the less at the zenith of

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43 Dart, 'Early Mines in Rhodesia : The Mystery of Chowa', *Sunday Times*, Johannesburg, 25 Nov. 1930.

44 Dart, 'Prehistoric Manganese Mines at Broken Hill', *Rand Daily Mail*, 13 Oct. 1930.

their metallurgical and artistic enterprise.<sup>45</sup>

Could these people have mined the manganese at Chowa? Pyrolusite in particular was known to be in great demand 3,000 to 7,000 and even 10 000 years ago in Phoenicia, Egypt and Spain as a pigment, a glaze for pottery and beads, or perhaps by the Babylonians and others for fabric dyeing. The investigators were unable to qualify this point.<sup>46</sup> Whoever were the people who mined at Chowa in many past millenia and covered their tracks with infill of their working to ensure secrecy of it, only in the 20th century in 1930 would scientists unlock their secretive ancient mining techniques!

The team's work at Mumbwa and at Chowa, though arduous in the main, had been satisfying, successful and rewarding during which time Dart had maintained a strict regime of work. When at Mumbwa he told the young *Livingstone Mail* reporter, Kay Stevens, (daughter of R. H. Stevens, general manager of the Rhodesian Broken Hill Development Company), 'I make a point to try and race the light to the cave each morning', and Kay noted he started work before 6 a. m., a thermos of black coffee and pipe in hand.<sup>47</sup> Dart however gained some respite from his toil conversing with the many visitors to the camp. (fig. 68). On the other hand his colleagues took breaks going on game hunts or visiting other caves. At Kawena Pit (place of death) they risked their lives descending its depths on knotted ropes to retrieve human bones of the unfortunate victims of past chiefs of bygone centuries. Fond memories would remain in Dart's mind of camp life, evening meals of roasted venison, hearty conversations, the Italians partaking of their chianti, lights out by 9 p.m., side arms at the ready by the stretchers to ward off prowling leopards at Mumbwa, particularly for use against the one which carried of "Karoo" the little fox terrier camp mascot; and the Expeditions'

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45 Dart, 'The Discovery of a Stone Age Manganese Mine at Chowa, Northern Rhodesia', *Trans. Roy. Soc. of S. Afr.*, vol. 22, 1934, p. 70.

46 Dart, 'Early Mines in Rhodesia : The Mystery of Chowa', *Sunday Times*, Johannesburg, 25 Nov. 1930.

47 Kay S. Smithford (*née* Stevens) letter to F. Wheelhouse 28 Oct. 1996.

last night of song there, Nino del Grande's melodious tenor voice echoing across the moonlit veld. At Chowa Dart would recall pleasant times hosted by Royal H. Stevens and his wife Delia in the General Manager's bungalow, a reprieve from the back-breaking dig at the mine, ever more enjoyed by the luxury of hot baths over the rustic bush showers. Nor would Dart forget the unexpected pleasure of meeting once more with General Smuts while driving back one day from Chowa to Broken Hill to their hosts' bungalow with Expedition members in Gatti's maroon Buick. Smuts with his family collecting botanical specimens in the area, had heard Dart was at Chowa and was travelling out to see him. The two cars met face to face on the narrow track. Impromptu morning tea followed while seated on the cars' footboards; lively conversational exchanges rewarding all those present, and later also when all were hosted by Royal and Delia Stevens.<sup>48</sup>

The purpose of the next leg of the Italian Scientific Expedition's travels was for Commander Gatti, already with permission from the Government of the Congo Belge (later Zaire and The Democratic Republic of Congo) to obtain a gorilla specimen from the Ituri Forest for the Department of Comparative Anatomy at the University of Florence. However it would also provide Dart en route, time for his well-planned visits to mine sites, Bushman caves, hospitals and for discussions with medical men about their work.

Leaving Broken Hill (now Kabwe) on 10 September 1930 it pleased Dart to see the influence of the South African medical schools by their doctors at mine hospitals at Nkana, at Luanshya Roan Antelope Mine, at N'changa; particularly at Luanshya, known as the valley of death until the forest was cleared and swamps filled in a mile around the township on the advice of the medical men to rid it of its mosquito infestation and thus help control malarial outbreaks. In Northern Rhodesia (now Zambia) the party also viewed numerous ancient copper mines in Kansanshi, looked over the

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48 *ibid.*

flourishing copper mine at N'Changa on the Belgian Congo border, after which, a day's journey to Shinsenda was reached using en route the only steel roadbridge in that colony, and which was erected by a mining company over the Kafue River.

Onwards the Expedition reached Elizabethville (now Lumbumbashi) the capital of Katanga (now Shaba), which region contained over four hundred ancient huge copper mines. It was estimated that over ten million tons of copper had been extracted from the African continent from Katanga Province and from Messina and Phalaborwa in the northeastern Transvaal in South Africa. Visits were made to the Star of the Congo Mine of ancient times, now a pleasure swimming resort 30 metres deep, also the Likasi (now Jadotville) and nearby Panda mines. The vastness and range of Africa's ancient mining enterprises impressed Dart particularly the mining ventures of copper and iron in the Rhodesias, Bechuanaland, Portuguese East Africa (now respectively Zambia, Zimbabwe, Botswana and Mozambique) and in the Transvaal, and tin mining also at Rooiberg in the Transvaal of South Africa. It was obvious to Dart that in remote times Southern Africa was over-run by a gigantic mining enterprise. In Dart's opinion the tin-copper mix (bronze) with its unusual high nickel impurity from the Rooiberg furnaces, described and discovered by Mr Hugh Gordon and the late Dr Percy Wagner a few years earlier, and similar to that found in the bronze gates of Shalmaneser's palace, showed him the high probability that it was exported from Rooiberg to Egypt and Mesopotamia.<sup>49</sup>

Obvious everywhere in the Belgian Congo were the great number of huge cathedrals and churches, missionaries of many denominations, though predominantly Roman Catholic. The medical advances in this vast territory, the large, well-run and manned hospitals, veterinary laboratories, bacteriological institutes and meteorological stations gained Dart's esteem

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49 R. A. Dart, 'Greatness of the Congo Belge', *The Rhodesian Mining Journal*, July 1931, pp. 389-93; R. A. Dart, 'Through Africa with the Italian Expedition', the *Leech*, May 1931, pp. 28-33.

and variously located at Elizabethville, Gisenyi at the northern end of Lake Kivu, at Leubo on the Luala, a tributary of the Kasai River, Port Francqui and at Albertville (now Kalemie) standing on the shores of Lake Tanganyika, most of which he visited personally. He was equally impressed by the employment also in this territory, and not utilised to any great extent in South Africa, of the native work force as firemen, traffic directors, postal officials, drivers, guards and stationmasters on the railways, typists and port officials on the rivers, and resolved to inform his colleagues and Government of advantages to be gained for South Africa should a similar system be employed. He would also suggest the possibility of Pan-African exhibitions, research collaboration and congresses in order 'to weld into one organic and workable whole the multitudinous interests of our joint heritages in Africa'.<sup>50</sup>

At Bukama on the Lualaba River, headwaters of the Congo (now Zaire) River, a steamer had been sent expressly for Gatti's use to transport the Expedition members, also a barge pulled behind carried the vehicles and equipment, during the week's travel to Kabalo. En route, however, all except Dart were inflicted with malaria a consequence of a mosquito plague at Leubo ten days earlier, necessitating the steamer's Captain to phone through to Kabalo for a doctor to come from the inland tin mines at Kalanda to treat the victims. After this, Albertville (Kalemie) on Lake Tanganyika was reached by train. In two nights a steamer then conveyed the party on this beautiful fresh water lake of 676 kilometres length, to Uvira at the northern end, from where the Expedition travelled by road along the breathtaking escarpment overlooking the Ruzizi River, then northward to the south end of Lake Kivu at Costermansville (now Bukava). From this point the weekly mailboat ferried the Expedition members towards the northern end of Lake Kivu at Gisenyi. Two days' more travel through the National Park Albert (now Virunga National Park), where at the foot of the escarpment to the

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50 Dart, 'Through Africa with the Italian Expedition', the *Leech*, May 1931, pp. 28-33; Dart, 'Greatness of the Congo Belge', *The Rhodesian Mining Journal*, July 1931, pp. 389-93.



south-west of Lake Edward the foot-weary party had arrived at the edge of the Ituri Forest. Dart mentions other places visited were Irma, Kilo-moto and Aba. At a spot in this huge forest Gatti had arranged to meet the Mambuti Pygmy leader and his tribe, and on doing so through a Bantu interpreter, made plans for the long-awaited gorilla hunt.<sup>51</sup>

After several days of tracking, the Pygmy leader on following the feeding trail of the gorillas through the wild celery and bamboo vegetation, sighted a group of nine gorillas and young ones including one known to him as the largest male in the forest and by name, 'Moami Ngagi'. On 13 December Gatti and the Pygmy leader followed by del Grande, Dart and the photographer, Reverso with other Pygmies, came at close quarters with the group. 'Maomi Ngagi' sensed their presence and danger, turned suddenly, and with a howl of wrath made straight for Gatti. His shaking hand fired the fatal shot, the gorilla falling as Dart and the others rushed to assist Gatti now shivering and near collapse from a malarial attack. Aiding him back to camp with the others, Dart medicated him with quinine and wrapped him in blankets to sweat it out. Meanwhile del Grande erected two posts and a crossbar, hung the victim by its hands, and as night fell, climbed a nearby tree to guard it against the other gorillas wanting to claim it, and which he only dispersed by his pistol shots in the air. At sun-up Dart took measurements, others took photos of this huge gorilla (fig. 72), which weighed 218 kilograms, reached a height of 1.97 metres, had an arm measurement of 1.16 metres, a chest measurement of 1.44 metres. Other statistics were taken—belly 1.84 metres, biceps and wrist measurements 45 and 29 centimetres respectively. It was indeed a record specimen. Dart would remove the brain and heart and preserve these in formaldehyde solution. The Pygmies gained the task of skinning, cleaning, stretching and treating the specimen's hide with alum and salt, then the bonus of fleshing out the skeleton of meat for their tribal members. Later in New York Gatti published his account of the gorilla hunt with photos—it inspired Hollywood to invent the character King Kong.<sup>52</sup>

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51 Dart, 'Through Africa with the Italian Expedition', the *Leech*, May 1931, pp. 28-33; Dart with Craig, *Adventures with the Missing Link*, p. 56.

52 Kay S. Smithford (née Stevens) letter to F. Wheelhouse 27 July 1993 covering her personal contact and correspondence with Gatti, Nino del Grande and Raymond Dart concerning the Italian Scientific Expedition through Africa in 1930.

Time was passing. A concerned Dart approached Gatti to hasten their progress to be on time at Cairo. He had no success. One evening he left the camp, del Grande accompanying him on foot over several hours to catch a midnight bus for Butiaba on Lake Albert), where on a steamer he would begin his lone journey down the Nile to Cairo. The steamer called first at Rhino Camp on the way to Nimula just over the Sudan border and 209 kilometres distant and through magnificent scenery, rich in native fauna and flora. Then the steamer plied on to Juba, thence to Khartoum down the White Nile over 1,754 kilometres, through areas known as the Mountain Nile of rising peaks and equatorial forest and onwards to the Sudd Marshes. Through this forbidding morass of tall papyrus grasses and in which the paddle steamer was best suited to cope, it passed on shore Nilotic people setting countless fires in this grass. Because of river cataracts a train carried passengers on to Wadi Halfa to join yet another stern wheel steamer to Aswan, after which an express train took passengers on to Cairo—passing en route the ancient cities of Luxor and Karnak. Arriving in Cairo Dart surprised the bank manager who could not believe he had made his long lone journey down the Nile.<sup>53</sup>

Dart's traversing of Africa had taken him eight months of which time he later wrote:

This period turned out to be possibly the most exciting of my life, providing me as it did with an understanding of Africa and its people which I had previously lacked. My earlier feelings of being an exile and any disappointment felt during the five years since my discovery and its rejection by other anthropologists were washed away in my own sweat.<sup>54</sup>

After meeting his wife Dora in Naples, Dart eagerly looked forward with confidence to his appointments in London in February 1931 with members of the scientific establishment to personally present his claims for his 1924 South African discovery of the 'missing link' and to the publication of his extensive monograph of it detailing its great anthropological value.<sup>55</sup> Would his claims now be accepted or would further rejection of them prevail?

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53 Kay S. Smithford letter to F. Wheelhouse 27 July 1993; R. A. Dart, 'Through Africa with the Italian Expedition, the *Leech*, May 1931, pp. 28-33; Diana Dart Graham interview by Kay Smithford, Spartanburg, SC. USA, 14-18 Jan. 1994, copy of tapes held by F. Wheelhouse.

54 Dart with Craig, *Adventures with the Missing Link*, p. 56.

55 *ibid.*, p. 57.

## CHAPTER 8

## THE TAUNG CHILD IN LONDON : RETURN TO SOUTH AFRICA

Leaving Cairo from his 1930 trans-African expedition, Dart advises he was 'lean, bronzed and feeling like a Rider Haggard character, I felt confident enough to tackle anything'. His confidence was not lessened by Dora's report to him in Naples that her lecture and display of *Australopithecus* to Austrian scientists had not shifted their belief that the Taung skull was that of an ape.<sup>1</sup> Neither was he daunted by the numerous worldwide press items of yet more recent discoveries during 1930 of Peking Man consisting of the fossilized bones of ten men, comprising a perfect cranium and facial bones, also bones of a primitive rhinoceros. These latest finds now complemented those previously of two teeth found in 1922 (revealed in 1926), another tooth in 1927, in 1928 parts of two lower jaws and fragments of a skull, more teeth in 1929 and on 2 December of that year an almost complete skull.<sup>2</sup> While cognisant and appreciative of such significant finds in China, now hailed by their discoverers to be those of the true 'missing link', Raymond Dart nevertheless still held fast to his view that the Taung skull represented the earliest link thus far found between ape and man.

On reaching London in February 1931, 'six years to the day after the initial *Nature* announcement',<sup>3</sup> Dart quickly contacted Elliot Smith, Arthur Keith and Smith Woodward, three of his previous adversaries, who, none the less, welcomed him warmly though had words only for the wondrous most recent specimens of early man from the Far East. Elliot Smith on 17 February would lecture on these discoveries to the Zoological Society of London and Dart found an invitation by his mentor to enlighten the audience also on his Taung skull too good an opportunity to pass up.<sup>4</sup> However, calamity befell Dart. He could in no way match the polished performance of Elliot Smith, who enlivened his talk on Peking Man with lantern slides and casts of it. By virtue of a month's trip to China during August 1929 and one

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1 Dart with Craig, *Adventures with the Missing Link*, pp. 56-57.

2 *Cape Times*, 3 Aug. 1930; *The Times*, 14 Feb. 1930, 5 May 1930; *Rand Daily Mail*, 17 Sept. 1929; the *Star*, 11 Apl. 1929; G. H. R. von Koenigswald, *Meeting Prehistoric Man*, Thames & Hudson, London, 1956, pp. 40-47.

3 John Reader, *Missing Links : The Hunt for Earliest Man*, Little, Brown & Co., Boston, 1981, p. 92.

4 Dart with Craig, *Adventures with the Missing Link*, p. 57.

from which he had recently returned in 1930, Elliot Smith could embellish for his audience those mysteries of the Chou-K'ou-Tien (now Zhoukoudian) cave site 48 kilometres from Peking (Beijing), which he had explored with Davidson Black.<sup>5</sup> He could elaborate also on the Java Man site which he also visited that year during the Pacific Congress of anatomists and prehistorians.<sup>6</sup> Elliot Smith could now confirm Dubois's *Pithecanthropus* form whose nearby thigh bone was previously doubted, now with Peking Man, *Sinanthropus* also had walked upright, and as in the case of Peking Man was both cannibalistic and adroit in the art of fire making. He could confirm that Peking Man's brain was larger than that of *Pithecanthropus* (Java Man), its bones thinner, and that the two jaws earlier found, showed in their ape-like condition, a resemblance to that of Piltdown Man. He would stress that for this reason human status could now be assigned to Piltdown Man. He reported that from papers presented in Peking by Drs Black and Grabau to a convention held there on 23 December last, these discoveries were claimed to outrival Piltdown and Neanderthal Man. Elliot Smith himself had no doubt they were the most remarkable and important contribution made to the history of human development. His belief in an Asiatic genesis of human kind remained firm.<sup>7</sup>

When introduced by the Chairman Sir Arthur Smith Woodward, Dart realised by contrast to Elliot Smith's delivery, his own must seem an anti-climax, nevertheless he soldiered forth, describing while cradling his tiny Taung skull in his sensitive hands, its attributes and the circumstances of its discovery. There proved no moment of glory for Dart—vacant faces showed their disinterest, for alas, unlike Grafton Elliot Smith he had no casts or slides with which to colour his delivery. Critical of his own 'fumbling account' he penned:

I stood in that austere and chilly room, my heart bounding with the hope that the expressions of polite attention on the four score faces before me might change to vivid interest as I spoke.<sup>8</sup>

Afterwards those interested enough to inspect the skull, could only liken it to that of an ape.

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- 5 *Cape Times*, 30 Aug. 1930; Dart with Craig, *Adventures with the Missing Link*, p. 57.  
 6 A. P. Elkin & N. W. G. Macintosh, eds., *Grafton Elliot Smith: The Man and His Work*, Sydney University Press, 1974, pp. 17, 36.  
 7 *Rand Daily Mail*, 17 Sept. 1929; *Cape Times*, 3 Aug. 1930; Dart with Craig, *Adventures with the Missing Link*, p. 57.  
 8 Dart with Craig, *Adventures with the Missing Link*, p. 58.

An emotionally spent Dart dined with Elliot Smith, J. P. Hill, William Wright, Solly, Zuckerman and R. H. Burne that evening and found his spirits lifted by a further invitation the next evening to accompany Elliot Smith as his guest to the Royal Society Club, where a coterie of scientists would hear his discourse on his Taung skull. Response from this eminent gathering cheered Dart who felt that while he may not have convinced them of the human ancestry in Taung, he did convince them that it was not just an insignificant ape.<sup>9</sup>

More days of disappointment followed. The high hopes Dart held for the Royal Society's imprimatur on his 300 page Taung skull monograph were soon to evaporate when Elliot Smith, to whom he had sent it a year earlier, advised that the committee was only prepared to consider publication of the section on dentition. He was not spared further torment. Arthur Keith had brashly informed him that he had already written an exhaustive description of the Taung skull in his forthcoming book. Knowing Keith's analysis would be adverse and reflect the British attitude, also that Wolfgang Abel was to produce in a European journal a one hundred page account of the Taung specimen's dentition, Dart determined that any further publication by him in Europe would be superfluous. He decided he should take his monograph back to South Africa with the hope of its later publication elsewhere. In later years the eminent British scientist, Emeritus Professor Sir Wilfrid le Gros Clark of Oxford University, who would twenty years later champion Dart's work, was amazed that this important manuscript was not accepted. Searching for a possible reason for this he could only surmise, 'possibly it was written in a style unsuitable for publication', and suggested it may have been considered 'too effusive for a scientific publication traditionally accustomed to a more colorless presentation'. What he could never understand was why some of the senior anatomists of the time, 'who fully recognised the obvious importance of Dart's fossil, did not offer to help in its redraft to ensure publication'.<sup>10</sup> Shamefully it would remain unpublished.<sup>11</sup> However, in the next few years Dart did publish a series of papers on the Taung specimen dealing with

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9 *ibid.*, p. 59.

10 Wilfrid E. le Gros Clark, *Man-Apes or Ape-men? : The Story of Discoveries in Africa*, Holt, Rinehart & Winston, Inc., New York, 1967, p. 26.

11 P. V. Tobias, *Dart, Taung and the 'Missing Link'*, p. 45.

particulars of the dentition and skull.<sup>12</sup>

On leaving England in early 1931 Dart generously left his precious *Taung skull with Grafton Elliot Smith to have casts of it expertly made by F. O. Barlow of the British Museum for study by friend and foe alike throughout the world.*<sup>13</sup> These were used by Arthur Keith and no doubt the wealth of information in Dart's monograph furnished the artful Keith with carrion nourishment to cleverly manipulate through the first six chapters of his book and in which he would summarily dismiss and discredit Dart's research. In final assessment he penned, 'All the evidence bearing on *Australopithecus* is at best explained by supposing it to have sprung as a branch of the phylum which gave us the gorilla and chimpanzee, and not as Professor Dart contends, from the root of the human phylum'.<sup>14</sup> Perhaps it did not surprise Dart that as well as Keith's adverse treatment of his work in his 1931 book, Elliot Smith's further book of the same year, *In Search of Man's Ancestors*, revealed no favour of early possible origins in the South African fossil. He continued to look to the Far East for human emergence. He would refute Dr Broom's announcement of his changed view, that the Taung skull may possibly be of early Pliocene times, preferring to still consider Taung too late to have had a role in human genesis.<sup>15</sup>

Meanwhile in London in 1931 the Taung skull itself had encountered its own breathtaking adventures. The night before Dora Dart was to sail from England she was hosted by the Elliot Smiths, from whom while there she would collect the Taung skull in its little black box (fig. 73) and neatly wrapped as a brown paper parcel. Accompanied by Elliot Smith with parcel back to her hotel by taxi, coffee partaken of there together, Elliot Smith engaged another cab for home, only to be later awakened from his sleep by an alarmed phone call from Dora. Did he take the parcel back with him? In horror he realised it must have been left in the first cab. He suggested she should come quickly in a cab to his home from where they would walk to the nearest police station to report its loss. Hours of anxiety followed as they

12 R. A. Dart, 'A Note on the Taung Skull', *S. Afr. J. Sci.*, vol. 26, 1929, pp. 648-58.; R. A. Dart, 'The Dentition of *Australopithecus africanus*', *Folia Anat. Jap.*, vol. 12, Aug. 1934, pp. 207-221.

13 Dart with Craig, *Adventures with the Missing Link*, p. 59.

14 Arthur Keith, *New Discoveries Relating to the Antiquity of Man*, Williams & Norgate Ltd., London, 1931, pp. 37-116. It is noted Keith does not italicize *Australopithecus* but does so for *Eoanthropus* (Piltdown Man).

15 G. Elliot Smith, *In Search of Man's Ancestors*, Watts & Co., London, 1931, pp. 25-54.

awaited a response to the police enquiries. One came after 4 a. m. in the morning from the Fulham Police Station where the honest cab driver had handed it in after discovering it on his back seat at the end of his shift. A dismayed police officer found relief when the owners claimed the parcel's chilling contents.<sup>16</sup> It can be imagined a relieved Dora would never let the Taung baby out of her sight until safely back with it in Johannesburg in August 1931.

With dismissal once more of his Taung skull Dart must have had a lonely trip back to South Africa early in 1931. He must have wondered why things had gone so terribly wrong. Perhaps he reflected that as had Davidson Black he should have travelled overseas with the Taung skull to gain support, but he knew he had been right in rejecting the offer to do so from his own University in 1925. Tempting as the correspondence offered of having leave granted and his fare paid to England to make use of comparative anthropoid skulls and library facilities not available in South Africa, Dart's independent nature would not abide the proviso set by the Witwatersrand Council of Education that in return he donate the skull to the University. In his rejection of the offer Dart also advised he felt he could not be away for any considerable time from his young department and his newly established home.<sup>17</sup> It is possible he may have had doubts about the Taung skull's future—it might be sent to the British establishment for assessment as was the accepted practice of the day. Of this he had rightly perceived, there would be no joy—already this group in that year of 1925 had proved to be Dart's chimera. The writer John Reader later pointed out that by his trip to London in 1931 'he had bowed to convention', though in doing so considered, 'he was too late to be persuasive'.<sup>18</sup> However it must be said in hindsight that if Dart had taken up his University's offer in 1925, with scientific opinion so firmly set then on the Far East for man's origin and Piltown Man reigning firm in England, no eloquence on his part or his display then of his Taung skull would have shifted these opinions. The opinions of Dart's adversaries still remained firmly embedded in 1931, thus denying any role for an African emergence of man. Notwithstanding, Dart's faith in his own assessments remained unequivocal. Would his Taung skull, phoenix-like rise from the ashes?

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16 Dart with Craig, *Adventures with the Missing Link*, pp. 59-60.

17 *ibid.*, p. 51.

18 John Reader, *Missing Links : The Hunt for Earliest Man*, Little, Brown & Co., Boston, 1981, p. 91.

## Return to South Africa

When Raymond Dart arrived back in South Africa in March 1931 and Dora with the rescued Taung skull in August, this second rejection of it in London seemed to be the end of the chapter for it.<sup>19</sup> In June his feelings of disappointment and possible thought of leaving South Africa surfaced in his letter to his respected and earlier mentor in Sydney and now at Cambridge, Professor James T. Wilson. Wilson's recent support in London above all others of Dart's discovery, linked with Dart's sincere interests for his students and the medical school, were paramount factors in his decision to continue along his lonely though adventurous path in South Africa. He wrote to Wilson:

It was more than kind of you to write so fully to me relative to Birmingham. I fully realize what factors can influence an appointment and will not indulge in any distress should another man win. My only misfortune lies in the anatomical solitude of South Africa and better men than myself have had similar or more trying positions to occupy in that respect.

Possibilities have not altered activities here. Despite the temporary absence of Dr Shore and the succumbing of my Histology Lecturer to a duodenal ulcer (which still lays him aside) I have been able to start and superintend various students in their researches—two on anthropological investigations and about six on histological and related matters. They keep one on the jump.<sup>20</sup>

Other matters discussed, Dart in his last paragraph conveyed his thanks to Wilson:

I will not send you a long letter or you will be thinking it requires a reply - it doesn't! I want only to say how much I was affected by your deep interest in my own self and for all you have done. I felt in Cambridge, that I was back once more in Sydney and it did me more good than you can know. I am happy that you are so well and demonstrate today the same vigour in Anatomy that you had nearly 20 years ago.<sup>21</sup>

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19 Dart with Craig, *Adventures with the Missing Link*, p. 59.

20 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 6, R. A. Dart, Johannesburg, letter 17 June 1921 to J. T. Wilson, Cambridge.

21 *ibid.*



The mention of a possible appointment to Birmingham would seem to clarify Dart's statement in later years to the daily press, that in accepting the post in Johannesburg he did so with the thought in mind of returning to England within a few years.<sup>22</sup>

Now with Dr Alexander Galloway and Dr Lawrence Wells on his staff<sup>23</sup> (fig. 74), and the possibility that Robert Broom (only a thought in Dart's mind at that time) might also be involved in some way with work in his department, Dart envisioned the time ahead as yet another possibility to pursue more fully his first research love, that of comparative neurology. Of this he wrote enthusiastically to Wilson advising he was directing students in research on the parathyroid, thyroid, tracheal and oesophageal investigations; plentiful human histological preparations being available.<sup>24</sup> But would this research work, his own paramount interest become a reality for him?

Dart revealed the Taung child had proved a challenge which he had readily accepted, even though he had no burning desire as Robert Broom had to actively search for fossils.<sup>25</sup> As Broom was now in his mid-sixties, under what circumstances might Dart envision his joining his anatomy department? What role might Dart play in gaining his services? Would their shared and harboured thoughts ever materialize of the necessity of locating an adult *Australopithecus* skull and thus firmly establish the Taung child's rightful significance? There is no doubt of Dart's gratitude for Broom's assistance to him regarding the Taung skull's confirmatory status. He wrote"

He was the first scientific visitor who came to see the Taungs skull...He was also the only one who gave his unqualified and unwavering support, both locally and overseas, to my interpretations; and the only one to adduce further palaeontological faunal, as well as comparative anatomical facts about the skull and the Taungs site to support those conclusions.<sup>26</sup>

22 The *Star*, Johannesburg, 9 Feb. 1966, pp. 10-11.

23 Dart with Craig, *Adventures with the Missing Link*, pp. 62-63; Dart, 'Thirty Years (1924-1934) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 294.

24 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 6, Dart to Wilson 17 June 1931.

25 Dart with Craig, *Adventures with the Missing Link*, pp. 71-72.

26 Dart, Preface to G. H. Findlay's, *Dr Robert Broom F.R.S.*, Balkema, Cape Town, 1972, p. 2.

There is little doubt also that Broom by his confirmation of the status of Dart's Taung skull and his other papers on the 1913-14 Boskop Man and in 1923, 'The Yellow-Skinned Races of South Africa' had to a small degree lifted his existing poor status in public and scientific eyes, a position albeit mainly brought about by his transgression of earlier years by the sale overseas of precious South African fossil collections. In Dart's mind, Broom's continued rejection was both 'unnecessary and lamentable', moreso as Broom's medical practice was in decline and hardly gained him an income. Thus Dart unhesitatingly acted to retrieve Broom's status. Over the years he gathered colleagues to support him, particularly Professor L. F. Maingard and Professor J. A. Wilkinson, both past presidents of the South African Association for the Advancement of Science. He protested vigorously to the Prime Minister, General Smuts and to Mr J. H. Hofmeyr (a past Principal of the University of the Witwatersrand) and now the Minister for Education and the Interior, over the waste to the country of Broom's intellectual capacity. However, the means by which the status quo for Broom might be restored would take some time.<sup>27</sup>

While Dart's interests in *Australopithecus* were seemingly repressed he remained alert to indicators of the presence of any ancient human activities in southern Africa. Many would irresistibly capture his attention and from which he might glean answers to some of the mysteries of the continent's past human occupation and activities undertaken, particularly south of the Sahara. Hallmarks of Dart's work were his objectivity, his prescience, his ability to formulate theories and in time mostly prove them. In many instances his ideas would again bring him into deep conflict with some of his colleagues. Nevertheless most of his inceptive probes into matters and places proved to be scientifically profound and were of lasting benefit.

In 1932 the discovery by Mr E. S. J. van Graan and four students, one his son, from the Pretoria University of a flat-topped sandstone sacred hill 80 kilometres east of the rail line of Messina in the northern Transvaal where the Shashi River divides Bechuanaland (now Botswana) from Southern

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27 Dart, 'Robert Broom—His Life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, pp. 13-14. Lecture entitled Robert Broom Memorial Lecture, delivered at the Durban Museum during the Annual Congress of the S. A. A. for the Advancement of Science, July, 1951; R. J. Mason, *Prehistory of the Transvaal*, Witwatersrand University Press, 1962, p. 21, states first discovery of Boskop Man in 1913 - other writers state 1914.

Rhodesia (now Zimbabwe), would prove highly significant. By name Mapungubwe, 'hill of the jackals', known and feared by the local natives, van Graan and the lads worked alone to remove the fortified exterior and were rewarded with an astounding treasure. This initial party gathered pots, rusted iron tools, copper wire pieces, glass beads and gold plate, also gold beads and bangles as well as gold-beaten work featuring rhinoceros forms. The party also observed the first burial chamber south of the Limpopo containing a skeleton surrounded by gold ornaments. The total haul from this site initially represented 130 thin intact gold bangles, an exquisitely made black polished bowl positioned under the left arm of the skeleton, pieces of gold plate under the skull on a wooden headrest, also a gold bowl. Professor Fouché of the Pretoria University received this priceless collection, the gold from which, when assayed by the Royal Mint, proved to be of 90 per cent purity. The action of Fouché in notifying the Government of this discovery assured purchase in 1933 of this Greefswald farm which bore this hill and later gained its protection as a national monument. Within two years of further investigation there, twenty-four burials were unearthed and investigated. Fouché contacted Sir Arthur Keith to undertake the work on these burials. Keith declined though he had no hesitation in stating that Dart was the most competent man to carry this out.<sup>28</sup>

Mindful of his bitter reception over *Australopithecus* and of Miss Caton-Thompson's and others' heated discussions over the Zimbabwe Ruins' inhabitants at the 1929 Johannesburg meeting of the British Association for the Advancement of Science who claimed Bantu people to be the indigenes of the area, Dart declined to do this work himself. He feared his report on these remains might be considered prejudiced. Wisely he offered the services of his staff members, Drs Galloway and Wells who had the aid of the vast store of comparative skeletal material now housed in his medical school. Their report, nevertheless, drew controversy, particularly as the early investigators from 1933-1935 working under the direction of the Archaeological Committee of the University of Pretoria produced their publication in 1937 entitled *Mapungubwe: Ancient Bantu Civilisation* which outlined the cultural objects found there as being related to the Zimbabwe culture and also found amongst modern Bantu Negro peoples. Instead of settling the question of Zimbabwe Ruins, Dart advised that it had created an impasse.

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28 Dart with Craig, *Adventures with the Missing Link*, pp. 60-63.

Galloway's paper of the same year contraverted these findings. He, as a physical anthropologist concluded these Mapungubwe skeletal remains represented a homogeneous Boskop-Bush population physically akin to the post-Boskop inhabitants found in the coastal South African caves at Zitzikama and that they had inhabited the land before the arrival of the Bantu. Further the variegated glass beads found with the burials were assessed by him as being trading beads from the Orient.<sup>29</sup>

As the site of Mapungubwe was the first South African discovery of wrought gold objects outside Southern Rhodesia its outstanding importance was instantly appreciated by Dart and Galloway, as was the fact that Zimbabwe Ruins lay only 321 kilometres to the north east of this site. Now that the discovery had been made of skeletons associated with these wrought gold items at Mapungubwe, there was high hope of 'ending all previous uncertainties as to the people responsible for the Zimbabwe culture for the gold mining'. Miss Caton-Thompson believed the ruins to date back to AD 900 and considered them indigenous and medieval. Dart argued the only way of understanding the ruins was to investigate the background of ancient mining and the Bushman paintings from the Congo to the Cape.<sup>30</sup> From his recent excavations in Northern Rhodesia with the Italian Scientific Expedition he knew only too well the importance of this approach.

Shortly a further advance to the knowledge of the previous inhabitants of the area near Mapungubwe was achieved when Captain Guy A. Gardner, Caton-Thompson's one-time assistant in Egypt, excavated during the next six years the Bambandyanalo Hill across the valley from Mapungubwe. Of the seventy-four skeletons he exhumed, many of which were almost complete, his verdict gave a greater age for them than those of the Mapungubwe civilisation. He was emphatic they were not Bantu burials, stating, 'They are exactly similar to pre-dynastic inhumations such as I have seen in Egypt, the body being partly or fully flexed and pottery either whole or deliberately broken, placed around the corpse'.<sup>31</sup> Gardner also found

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29 Dart with Craig, *Adventures with the Missing Link*, p. 63; Phillip V. Tobias (ed.) *Skeletal Remains of Bambandyanalo*, Alexander Galloway, Witwatersrand University Press, Johannesburg, 1959, p. 125.

30 Dart with Craig, *Adventures with the Missing Link*, pp. 62-65.

31 Dart with Craig, *Adventures with the Missing Link*, p. 65; R. A. Dart in Foreword p. xv to *The Skeletal Remains of Bambandyanalo*, Alexander Galloway, (ed.) P. V. Tobias, Witwatersrand University Press, Johannesburg, 1959, quoting from Gardner, 'Mapungubwe 1935-194040', *S. Afr. Archaeol. Bull*, vol 10, 1955, pp. 73-77.

cattle were buried ceremonially with artefacts, a relic of an old Hamitic cult. He found these people differed from the Bantu, were experts at pottery making, were pastoral in habit with no hoe culture, their implements were chiefly made from bone; they used no iron, though copper was used only for ornaments. From Galloway's painstaking analysis of these skeletal remains came his frank verdict, that no Negro features showed in these skulls, hence these people were pre-Negro and with whom the Bantu-speaking Negro peoples had never hybridized.<sup>32</sup>

Would this argument ever be resolved? Since Galloway's and Gardner's work scores of scientists have from a search of historical literary evidence, linguistic and cultural studies, archaeological and palaeontological digs, delved into, and traced all possible clues in the hope of unravelling the stupendous web of Africa's prehistory. Prominent among these were Dart, many of his colleagues including C. van Riet Lowe, Wells, Galloway, H. S. Gear, Trevor Jones, Sir Arthur Keith, Boule and Vallois, Drennan and numerous others as well as many of Dart's students. Following Dart's pioneering expedition in 1936--1937 to the Kalahari Desert with Professors Louis F. Maingard, C. M. Doke and Percival Kirby and I. D. MacCrone, there to face-mask the Bushmen at Bain's camp and study them from every angle—Dart followed up on a matter which astonished him—their Mongolian features. Phillip Tobias a student of Dart's and his later successor and gratefully sent on his path by Dart also to the Kalahari, would by 1958 by his own special studies there and of southern African populations, aided by a host of fossil material unearthed to that date, be in a position to substantiate Galloway's assessment of the skeletal forms unearthed earlier in the 1930s at Mapungubwe and Bambandyanalo. Tobias would go further to project as to how and why these people evolved genetically. He noted:

Between them, Bambandyanalo and Mapungubwe thus bridge a critical phase in the proto-history of Southern Africa—the last centuries before the Bantu-speaking Africans arrived and the first years after their negroidization of the sub-continent had begun.<sup>33</sup>

Geochronometric datings of beast burials were shown to have occurred about AD 1055 while Carbon 14 dating from material in the

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32 Dart with Craig, *Adventures with the Missing Link*, p. 65.

33 P. V. Tobias, (ed.), *The Skeletal Remains of Bambandyanaloo*, Alexander Galloway, p. 151.

Zimbabwe Elliptical Temple indicated it could have been built as early as AD 377 or as late as AD 941. Later datings (1959) show Zimbabwe as, AD 714, Bambandyanalo AD 1055, Mapungubwe AD 1410.<sup>34</sup>

In the view of Tobias, 'In his approach Galloway has skilfully wedded the morphological to the metrical...By his painstaking attention to descriptive, metrical and developmental morphology, Galloway has set an example, a pattern, for skeletal studies in the future'.<sup>35</sup>

In Dart's assessment:

Bambandyanalo assumes significance in the history of South African archaeology because it has a Zimbabwe-pre-Zimbabwe stratification. Not only that, but it is the first site having an adequate number of skeletons accompanied by funerary furniture to show that the population at the time the Zimbabwe culture was introduced into the Limpopo watershed was Boskop-Bush in physical type and pastoral Hottentot in culture.<sup>36</sup>

Twenty years on from Tobias's substantiation of Galloway's and Gardner's determinations in the 1930s, he would edit that classic volume, *The Bushmen: San Hunters and Herders of Southern Africa*, sharing his contribution of his evolutionary perception of these people, with twelve other highly regarded scholars. Throughout its 206 pages with plentiful photographs these scholars recounted Bushman prehistory, art, language, culture, religion and folklore. The expansion of knowledge of these early inhabitants to that date can be gauged by the fact that no fewer than 300 books and papers had been written on these folk. In his appreciative Foreword of the authors collective overview from innumerable field trips to study the Bushmen, their significance from the remote past to the present, their colourful art, differing languages, scientific knowledge and beliefs, folklore and mastery of their variant environments and survival of racial contacts Dart recalled his own pioneering investigations in 1936-1937 when accompanied by five other scientists. By comparison with later well equipped field trips, the first investigators travelled in an old university Albion truck, three privately owned cars, had a financial subvention of two

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34 Phillip V. Tobias (ed.) *The Skeletal Remains of Bambandyanalo*, Alexander Galloway, p. xi; R. A. Dart, Foreword to this book, p. xviii.

35 Tobias, (ed.) *The Skeletal Remains of Bambandyanalo*, Alexander Galloway, Witwatersrand University Press, 1959, p. 132-33.

36 Raymond A. Dart, Foreword, *The Skeletal Remains of Bamdandyanalo*, (ed.) P. V. Tobias.1959, p. xviii.

hundred and fifty pounds from the University and made their rugged trip over inferior roads, veld tracks and dry river beds, constantly losing time digging out the vehicles in sand drifts encountered before meeting for study seventy Bushmen in the Kakahari.<sup>37</sup>

In many other instances possible leads to the mysteries of southern African human prehabitation were often sparked by the unearthing of potsherds or stone tools, and mostly by amateur members of the public. In 1931 the press ran a further account of an ancient city near Heilbron of beehive stone huts, where preserved corpses and pot burials and a smelting industry remains were evidenced. Dart had visited this area years previously and stored this knowledge of its unusual past, as he had of his 1923 visit to Rooiberg and recorded that ancient tin-mining had been practiced there.<sup>38</sup>

Few subjects had fascinated Dart more from 1923 than red ochre when he was first sent by F. W. Fitzsimons those ochre- smeared fossil bones from the depths of the Zitzikama caves in the Cape. Had ochre actually been mined for such use? Why and where might this have been carried out Dart wondered? His interest had been heightened in the use of pigments both by prehistoric and local people by his recent excavations with the Italian Expedition at Chowa in Northern Rhodesia where mining of manganese in remote ages past had been established. Thus when advised of artefacts thought to have come from a cave on the border of Swaziland, Dart decided that at the first opportunity this was worthy of investigation.<sup>39</sup>

On 7 July 1934 he set off with his small band of helpers, taking Dr G. F. Berry in his own car, while Dr J. H. ('Jock') Gear travelled with Dr Alexander Galloway in his car on their mission to excavate this cave for possible evidence of human prehabitation in the remote and precipitous Lebombo Mountains on the border of Swaziland and Kwa-Zululand. They would travel as the crow flies 241 kilometres, though much further by road, which journey offered little comfort in hard-sprung cars over pot-holed roads. Numerous punctures needing difficult on the spot repairs, impeded their

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37 Phillip V. Tobias (ed.), *The Bushmen : San Hunters and Herders of Southern Africa*, Human & Rousseau, Cape Town, 1978, pp. 1-206; Dart, Foreword to this book, no page number.

38 'Miles of Ruins', *Rand Daily Mail*, 7 Sept. 1931.

39 Dart, 'The Multimillennial Prehistory of Ochre Mining', NADA, vol. 9, no. 5, 1968, p. 7.

progress. Such factors plus bad weather and Dart's illness, necessitated an overnight stay at Ermelo. At Piet Retief the following day they learned Galloway's car had overturned during the night, though by great fortune its occupants were unhurt. The car, however had to be left for repair. After a night's camp out their destination of Nosoka was reached by Monday 9 July, where a lorry with provisions and six convicts awaited their use. Onwards and upwards on foot they accomplished the arduous steep mountain climb, cleared and established a camp site within the cave's vicinity, erected and provisioned their tents in readiness for their project.<sup>40</sup>

Much difficulty was encountered in locating the cave which proved visible only from below the crest of the steep mountain face into which it directly cut some 400 metres above the Swaziland Lowveld. Their shouting helped ward off leopards in the area and once the cave was located its inhabitants of a troop of baboons smartly vacated it. A programme was formulated. Firstly all hands engaged in clearing the growth from in front of the cave. Secondly by means of an aptly-named 'chicken parade', the cavern floor was scratched, and netted encouraging pieces of quartz, numerous potsherd pieces, an ostrich eggshell bead and several shell fragments. Things looked promising. Next the hard physical labour of trenching was commenced at the mouth of the cave and continued daily with the meticulous routine sieving of every shovelful of dirt removed down to bedrock at 2.13 metres.

Successive layers yielded stone tools, artefacts, numerous potsherds and burned bone fragments, quartz nodules also flakes and a few water-worn pebbles. Dart had no hesitation in pronouncing this site that of a Middle Stone Age one. Faithful records were made of all activities, items gathered, also cave measurements. Surveys were undertaken of the surrounding mountains, in some places terraces were detected, gorges were surveyed, the Ingwavuma River waded along for some distance, botanical specimens collected also a note made of the indigenous birds. Contact was made with the local Induna (chief) and his people to seek their local knowledge of the area. One thing was very clear, the local natives were terrified of the cave and the spirits it harboured, as were the native

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40 G. F. Berry, Diary notes, 'Nosoko (Swaziland) Expedition 1934', (copy held by F. Wheelhosue).



prisoners allocated to help Dart—their terror of it was so great they preferred to sleep out in the rain rather than shelter inside it.<sup>41</sup>

The backbreaking work of cave excavation continued, made worse by howling winds, rain and thunderstorms which, together with illness of some of the team at times made camp life less than pleasant. *Brighter moments* were on dry evenings, enjoyment of camp fire chats, heightened by the unexpected visit of the three Allen brothers, Colin, Keith and A. Lewer, all medical graduates, whose bagpipe renditions lifted spirits immensely. However, not just cave excavation proved arduous but also the mandatory trips down the mountain to the valley store below at Nosoko to replenish supplies of water and food and to send and collect mail.<sup>42</sup>

Mission accomplished, the camp broke up on 23 July. Before leaving Dart requested he be advised of any further items found in the area by the farmers. Meanwhile once back in Johannesburg all members of the expedition were kept busy writing up their field activities. Six years later when advice came through to Dart of more objects located near Border Cave he sent members of his staff and students in 1941 to again make another dig, and over thirty years later he supervised work there once more. From his initial dig and later ones would be provided evidence of the last 100 000 years (more fully described later) and unique information on the hitherto unperceived and formative phases in the evolution of man which would dramatically change ideas of where modern man had developed and of his antiquity and his cultural achievements.<sup>43</sup>

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41 *ibid.*

42 *ibid.*

43 Dart, 'The Antiquity of Mining in Southern Africa', reprint from *S. Afr. J. Sci.*, vol. 63, no. 6, June 1967, pp. 264-67.

## CHAPTER 9

## BROOM'S BOUNTY

Raymond Dart and his colleagues succeeded in bringing Broom on side again with the South African Association for the Advancement of Science and in 1929 this body invited him to deliver papers at its meeting. It extended him also the invitation to become President of the Zoological Section in 1932 and in 1933, President of the Association itself. This body also had organised funds for publication in 1932 of his thirty-years' work on 'The Mammal-like Reptiles of South Africa and the Origin of Mammals'. Still continuing in medical practice and moving from place to place, early in 1933 found him almost penniless practicing medicine at Maquassi in the Transvaal. Then in 1934 at the age of sixty-eight years, came his scientific rebirth as General Smuts provided funds for his full time position as Keeper of Vertebrate Palaeontology and Anthropology at the Transvaal Museum in Pretoria.<sup>1</sup> Dart's faith and judgment of Broom's well of scientific talents and energies would not be misplaced. He commented:

In two years he described 25 new genera and 43 new species of Karroo fossil reptiles, but he was still busy with the snout and dentition of the platypus, the vomer-parasphenoid question, and the mammalian basi-cranial axis, as well as the origin of the human foot.<sup>2</sup>

Soon after his appointment Broom's delight at his posting was conveyed in his letter to Professor James T. Wilson and reflects his spontaneous and productive application to his task:

After being semi-retired for a couple of years with the depression I had to go back to practice and after practice for two years and a half I have been given a post in the Museum here as the Government think it a pity I should be wasting my time with practice when I might be doing more important work. I came to Pretoria less than two months ago and have got quite a lot done. The official duties are not arduous and I have plenty of time for serious work. I hope before the end of November to have off for publication the following papers most of which are nearly finished.<sup>3</sup>

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- 1 R. A. Dart, 'Robert Broom—His Life and Work', *S. Afr. J. Sci.*, vol 48. no. 1, Aug. 1951, pp. 13-14.
  - 2 *ibid.*, p. 14.
  - 3 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 6, R. Broom, Pretoria letter to James T. Wilson, Cambridge, 24 July 1934.

Among material covered in these papers by Broom were structure of the Cynodont skull, notes on reptiles also on mammalian cranial bones, the origin of the human foot, evolution of temporal areas of lizard skull, notes on the Boskopoid Springbok Flats skull (see above p. 149) also of a new genus of fossil reptile. They were sent for publication in high ranking journals such as *Philosophical Transactions* in London. Broom was pleased with his own progress, advising Wilson, 'So you see I am getting quite a bit done. As soon as these are off I hope to start on the Organ of Jacobson in Lemurs'.<sup>4</sup>

Co-inciding with Broom's Transvaal Museum appointment, his bond with the University of the Witwatersrand was assured by its conferment on him of the honorary doctorate of science degree, while a forged link with the Medical School was sealed also by his appointment to Dart's Anatomy Department as Lecturer in Comparative Anatomy. To the delight of Dart, who assuredly as Dean must have played a role in Broom's appointment, students would gain immeasurably from his vast knowledge and the tremendous stimulus of his personality, and importantly, 'his being a living link with Darwin and Huxley, Lyell, Hooker and Owen'.<sup>5</sup> Rarely were students inattentive, only one is recorded as escaping a lecture through a back window then sliding down a drainpipe—unfortunately for him, into the capturing arms of another lecturer. Questioned as to why he had fled, the student complained, 'He's not teaching us anatomy'. The lecturer reassured him, 'You will not remember much of the anatomy you are taught anyway, but you will never forget that you were taught by Robert Broom'. It must be said however, that Broom himself admitted that at times he didn't know when he started a lecture what he was actually going to cover.<sup>6</sup>

Following his productive publications on reptiles, Broom announced in May 1936 he was ready to search for an *Australopithecus*, a thought long stored in both his and Dart's mind, the importance of which, if found, would most certainly change the status quo for Dart regarding his rejected Taung skull.

Trevor Rubidge Trevor-Jones who started studying for his BSc (Hons.) in 1936, chose as his subjects Anatomy and Neurology, could not

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4     ibid.

5     Dart, Preface to G. H. Findlay's *Dr. Robert Broom F. R. S.*, Balkema, Cape Town, 1972.

6     L. H. Wells, One Hundred Years : Robert Broom 30 November, 1866—6 April, 1951, *S Afr. J. Sci.*, vol 63, no. 9, Sept. 1967, .p. 363.

have envisioned the role he would play in helping crack the ice pack of scientific opinion widely surrounding Dart's most important fossil, the Taung skull, *Australopithecus africanus*.<sup>7</sup> Trevor-Jones who first met Professor Dart in 1934 in his second year of medicine had already been drawn in by Dart to the Mupungubwe enquiries (fig. 74), advises:

Alas, instead of taking 6 years to qualify as a medical doctor and later an orthopaedic surgeon, it took me 10 years. He so inspired me with interest in anthropology hence my stray from medicine, doing a BSc. Honours and then an MSc. and finally on to my medical degree.<sup>8</sup>

Dart, however, ever uncanny in his ability to assess alike individuals' and students' possible achievement potentials, had invited Trevor-Jones in June 1935 to accompany him on his Rhodesian (Zimbabwean) lecture tour, over which Trevor-Jones reflected he, 'gave up a very attractive rugby tour for this six weeks' trip with Dart'.<sup>9</sup>

The pair set out in Dart's little red car from Johannesburg and travelled hundreds of miles over corrugated gravel roads. First stopping overnight at Messina on the banks of the Limpopo River they met Dr Louis Thompson, a keen archaeologist, and absorbed much knowledge from him of the ancient copper workings there. Travelling north 321 kilometres, Dart gave a lecture in the evening at Fort Victoria (now Masvingo). From there Dart made his second visit (the first in 1930) to the Zimbabwe Ruins, now with more time to study them, he mentioned he recognised 'a definite Phoenician influence'. Umtali (now Mutare) was reached the next day because a three-hour wait for a pontoon to take them across the Sabi River cost them an overnight stay in a primitive shelter on the north bank—a prowling leopard their only company. Dart's second lecture was given at Mutare, after which the comfort of the Cecil Hotel contrasted with their previous night's eerie sleep by the river bank.

Twenty-four kilometres to the north at Penhalonga the Martins hosted

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7 Dart, *Beyond Antiquity: A Series of Radio Lectures on the Origin of Man*, South African Broadcasting Corporation, Johannesburg, 1963, p. 61; F. Wheelhouse, *Life and Work of Raymond Dart* unpubl. MS, 1974, p. 151.

8 Trevor-Jones, Irene, S. A. letter to F. Wheelhouse, Sydney, 27 July 1993.

9 Trevor-Jones, letter to F. Wheelhouse, 27 July 1993; Kay Smithford, Spartanburg, SC., USA, letter to F. Wheelhouse 19 Sept. 1996, mentions Alfred Beit business partner of Cecil Rhodes established the Beit Scholarships in Rhodesia and activities such as the Federation of Women's Institutes' Beit Lecture Scheme, the latter body inviting Dart for a lecture tour.

them, (Trevor-Jones being accommodated outside in a lean-to near the chicken run). Martin outlined his work on the ancient gold mining site in the vicinity. There the slave pits were viewed. Trevor-Jones described, 'these consist of a narrow passageway into a stone-walled circular enclosure. The entrance to the enclosure was apparently guarded by a centrally placed pole. Surrounding every slave pit there was a platform apparently used for ancient habitations. We were easily able to identify watercourses and terraces on the hills of the Inyanga Mountains'.<sup>10</sup>

Eighty kilometres west at Rusape, Mr Barnes-Pope took the travellers to a granite outcrop covered with hundreds of grinding places and suggested there the ancients ground haematite for iron and tool-making and for physical decoration.

A further 321 kilometres north at Salisbury (Harare) Dart gave his third lecture in the cinema with slides. From Salisbury Dart and Trevor-Jones travelled to Bindura, an ancient gold mine workings, and reached through the Mazoe Valley. There Dart lectured in a tobacco barn. At Gatooma (Kadoma) 96 kilometres west of Salisbury (Harare) and at Gwelo (Gweru) more lectures were given before travelling south to Shabani (Zvishavane), site of more ancient workings. Outside Bulawayo at Hope Fountain, the Reverend Dr Neville Jones hosted the travellers for a week. They enjoyed examining his excellent stone implement collection and visiting, with him, the various Stone Age cultural sites. Dart lectured in Bulawayo and made reacquaintance on 22 July 1935 with Kay Stevens (now Baroness Rukavina - later Smithford), who with her husband hosted the travellers over dinner and exchanged memories of his association with the Stevens family while excavating with the Italian Scientific Expedition in Northern Rhodesia (Zambia) in 1930. Shocked and saddened the Baroness heard in confidence the circumstances of his marriage breakdown over the last few years.<sup>11</sup>

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10 Trevor-Jones letter to F. Wheelhouse, 27 July 1993.

11 Trevor-Jones letter to F. Wheelhouse, 27 July 1993; Kay Smithford letter to F. Wheelhouse 15 Mar. 1994 - Dart's confidence of 22 July 1935 to Kay Smithford would remain so until well after his death when conveyed to the writer for the purpose of notation in this biography. Dart advised that Dora - unable to have children - had developed deep depression. She begged divorce - her condition became so bad, Dart fearing her further health deterioration - finally consented. Dora never remarried. When recovered she set up medical practice in Pretoria. University of the Witwatersrand Archives, Mrs L. D. Amott letter to F. Wheelhouse

From Bulawayo, the Khami ruins were once more visited - in Dart's opinion these seemed a less sophisticated example than those of Zimbabwe ruins. After Hope Fountain the travellers made their return journey via the Kruger National Park. Trevor-Jones remembered all Dart's lectures being well attended and greatly appreciated and his closing remarks after every lecture were for the urgent need in the country for skilled archaeological investigation.<sup>12</sup>

As would others, Trevor-Jones came to realise the admiration and affection which Raymond Dart inspired in all who met him, even those in bitter opposition to some of his theories. He would come to realise Dart's 'superb sense of theatre which was innate and not acquired and realise the sense of terror as well he evoked in his students in their earlier years; a terror which almost invariably turned into appreciative understanding and ultimately, veneration.' To Trevor-Jones, Raymond Dart 'was a brilliant lecturer, a superb actor, with a mischievous streak; at times he could have his students in tears'. He advises that Dart's lectures were held in the Vesalian Theatre, always with a 100 per cent student attendance. To most students, Trevor Jones mentions Anatomy was a subject that just had to be passed. To Dart, however, 'Anatomy was the open sesame to life, and the understanding of mankind.'<sup>13</sup>

In the experience of Trevor-Jones the subject of Dart's lecture was never announced beforehand, but the technicians arranged every available specimen from the museum on the demonstration table; everything from a crocodile to the skeletons of apes and man. 'He would make his entrance, survey the specimens and with a characteristic gesture, with right arm outstretched - thumb and 3rd finger opposed he would say, "Aaah, today it will be the erect posture" - (or whatever). He would physically demonstrate his lectures, i.e. walk on all fours - knuckle-walking of the chimp, and brachiating of the gibbon'.<sup>14</sup> His visits to the dissecting room were dreaded

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28 July 1995. Dora served in World War 11 in the South African Medical Army Corp; Mrs P. Hyde, Wits Medical School letter to F. Wheelhouse 28 July 1995 advises in 1961 she provided five thousand pounds to establish a Fellowship for Research in the Department of Medicine at Wits (the Dora Dart Fellowship in Medicine). She also provided prize money for students; she died in Pretoria in 1974 - willing substantial funds for a Chair of Medicine - the Dora Dart Chair of Medicine was created in 1976 and held from then by Dr Michael Kew.

12 Trevor Jones letter to F. Wheelhouse 27 July 1993.

13 *ibid.*, 15 Feb. 1994.

14 *ibid.*

by all students. 'He would stride between the tables watching, and very often would jump on to a table to give expression to his thoughts and criticism in the very best of Australian. As he left the hall one would hear him say - "I enjoyed that"! Dart loved acting and when the students decided in 1936 to produce the play *The Anatomist*, Dart took the leading role of John Knox. This was a huge success with Raymond in his element'.<sup>15</sup> (fig. 75).

In that year Trevor-Jones was among several senior students and staff to whom Professor Dart handed over most of his anthropological interests, mainly because of the burden of his administrative responsibilities in order to continue his comparative neurological research. In this field he had recently published two more papers.<sup>16</sup> As well he had published several other general medical papers, one in those times particularly helpful for students, though frowned upon of the day. This was a discussion of the influences hormonal cycles have on male and female, human and animal behaviour, urging that people plan their work with regard to their cycles, and in which paper he was highly critical of the pressures on students of examination timetables, particularly those of the summer time.<sup>17</sup> In the early 1930s he also had published eight papers on education, several being on the Significance of Skill; several papers on anthropology, and in physical anthropology, contributed a chapter, 'Racial Origins' in the Book, *The Bantu Speaking Tribes of South Africa*, edited by I. Schapera and published in London by Routledge in 1937. He published more papers on prehistoric human migrations as well as several on symbolism and ritual and two further papers on *Australopithecus*.<sup>18</sup>

These times of building up of his medical school were carried out under continued difficult circumstances, as Professor Murray outlines:

In all, the picture that emerges of the medical school in the thirties, is one of cramped and inadequate facilities, and an overburdened staff engaged overwhelmingly in the training of undergraduates. Outside the Department of Anatomy, little was undertaken by way of

15 *ibid.*

16 Dart, 'The Anatomy of Visceroptosis', *J. Med. Assoc. S. Afr.*, vol. 4, May 1930, pp. 278-82; Dart, 'The Dual structure of the Neopallium: its history and significance' *J. Anat.*, vol. 69, Oct. 1934, pp. 3-19.

17 Dart, 'The human monthly cycle and its relation to work', the *Leech*, vol. 6, May 1933, pp. 4-21.

18 Ilse Fischer, 'The Published Works of Raymond Arthur Dart', University of the Witwatersrand, 1969, pp. 3-4, 10-11.

further research.<sup>19</sup>

Murray further noted:

Anatomy, under the energetic leadership of Dart was undoubtedly the strongest of the pre-clinical departments. It included some outstanding men on its staff, and developed an enviable reputation for research.<sup>20</sup>

In this period of student training the Witwatersrand Medical School prior to World War 11 produced a significant number of graduates who were to bring distinction both to themselves and to the University which trained them; ones who would fill top medical positions or gain academic positions both in South Africa and overseas.<sup>21</sup> Not readily realised at the time was the positive influence of a well laid cohesive Dart plan of which he had advised Professor Wilson:

I have come very close to realizing a dream I have had over many years of having young graduates as full time Assistants in all the departments of the School. We have them in Surgery, Medicine and Pathology and I hope to have 2 further ones in Clinical Pathology next year. The only other subject is Obstetrics and Gynaecology and we have a professorial change in December. I do not think it is too much to say that this simple mechanism has revolutionised teaching throughout the School, and research is being done in every department where they have been installed.<sup>22</sup>

Over the years it would be but one of many innovative plans of teaching and research which Dart would institute.

For his own research Trevor-Jones already had numerous baboon brain specimens available as well as some endocranial casts of fossil baboons from Taung, but felt he should have more fossil material for comparison. To his great surprise in 1935 these materialised in a most unusual way. They caught his eye in a hardware shop window in Krugersdorp, 48 kilometres west of Johannesburg one Saturday while he was awaiting a lift home by his parents. Even stranger was the advertisement with these bones, which surely ranks unique in

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19 Bruce K. Murray, *Wits the Early Years: a History of the University of the Witwatersrand Johannesburg and its Precursors 1896-1939*, Witwatersrand University Press, Johannesburg, 1982, p. 250.

20 *ibid.*, p. 245.

21 *ibid.*, p. 250.

22 University of Sydney Archives, The J. T. Wilson Family Archives, Dart letter to J. T. Wilson, Cambridge, 1 Nov. 1938.



anthropological history, and read, 'Buy your bat guano from the Sterkfontein caves and see the Missing Link'. An ecstatic Trevor-Jones rushed into the shop, though disappointed the owner, Mr Cooper, that he was only interested in the old bones. After free use of Professor Dart's name was able to procure three specimens. Reliving this moment in history, Trevor Jones related:

Cooper had the upper jaw of a monkey, not a baboon, but a sort of vervet monkey. There was a pelvis which I recognised as not the pelvis of an animal - this was either human or baboon - in fact it was manlike in appearance. Then he had some fossils of ungulates {hoofed animals} and he allowed me to take away the upper jaw, the pelvis and one of the ungulate skulls.<sup>23</sup>

An imperative now for Trevor-Jones was to visit the Sterkfontein caves to hopefully gain more specimens. He managed this a week later, courtesy of a lift in his girlfriend's car. As a child Trevor-Jones knew of the Sterkfontein caves. He grew up at Hekpoort in the Magaliesberg Mountains where his father was a schoolmaster. Passing the nearby limeworks (owned by Mr Nolan and first mined from 1895) was the most direct way to town in the horse and cart. Mr Cooper began exploiting the nearby Sterkfontein caves for bat guano in them for fertilizer, then the limestone for paint, finding stalagmites and stalactites the best source for this, with fossil breccia containing bones, the next best source, all of which he prepared in his on-site kiln.<sup>24</sup>

Once at the caves, beneath the undulating hills about 9 kilometres from Krugersdorp, Trevor-Jones and his friend were given by Geoge W. Barlow, the quarry master, an hour and a half tour of them down to 70 metres and were shown his fossil collection displayed on a long table in a tea room rondavel, awaiting purchase by the usual Sunday visitors. Trevor-Jones left with forty baboon skulls and jaws, some from the caves, some from the table. These, together with his hardware shop specimens he took to Professor Dart at the University.<sup>25</sup>

Dart, realising these baboon skulls were similar to those from Taung, remembering the significance of Josephine Salmons bringing to him a fossil

23 Trevor-Jones interview in Johannesburg by F. Wheelhouse, 2 April 1973.

24 *ibid.*

25 Trevor-Jones, 'Dr Robert Broom and Sterkfontein', *Beyond Antiquity*, (ed.) Raymond Dart, South African Broadcasting Corporation, Johannesburg, 1963, p. 61.

baboon skull from there in 1924 and culmination soon after of his discovery from that deposit of the first man-ape skull—his thoughts could hardly be subdued—but, of necessity, had to be. In the light of continuing crushing denial of his Taung skull by overseas scientists, the possibility of further rejection, cautioned his thoughts of any personal involvement on his part in excavations at Sterkfontein. The spotlight had continued to shine on discoveries at Chou-K'ou-Tien (Zhoukoudouian) near Peking (Beijing). Black's studies revealed Peking Man to be allied to Java Man which thus allowed the latter, elevation to human status. After Black's sudden death on 25 March 1934 (with Peking skull in his hand), his work was continued by Teilhard de Chardin and Professor Franz Weidenreich, the latter a one-time student of Schwalbe, the great German anthropologist in Strasbourg. Weidenreich's team would recover scanty remains of forty-five individuals and reveal evidence these early humans were cannibals. Von Koenigswald would write, 'All the skulls were smashed, the region round the occipital foramen was broken away in order to extract the brain, and there was even a femur that had been split lengthways to get at the marrow'.<sup>26</sup> Even this horrifying evidence seems to have been accepted whereas Dart's ideas of the Taung member's dietary habits were summarily dismissed.

Not only the Asian sphere dominated regarding a possible Garden of Eden, but in East Africa Louis Leakey's expeditions and discoveries in 1926 and to 1935 of skeletal remains and stone tools and his work with the German anthropologist, Hans Reck regarding his 1913 and later discoveries were well publicised. These would help gain Leakey acceptance by Cambridge in 1933 of his claim that skulls he found at Kanjera (Lake Victoria) and Kanam (East Africa) were of great antiquity and "must represent the oldest ancestor of true man".<sup>27</sup> John Reader points out Leakey's considerable success as a young man though remarks:

but how much of it was due to the fact that his views so closely echoed those of his mentors? It is simply ironic that Sir Arthur Keith, Professor Elliot Smith, Sir Arthur Smith Woodward and Dr W. L. H. Duckworth (the triumvirate of British anthropology plus one), who all congratulated the thirty-year-old Louis Leakey in 1933, were the very same gentlemen who had cast doubt upon the announcement of *Australopithecus* by the thirty-two-year-old Raymond Dart seven

26 G. H. R. von Koenigswald, *Meeting Prehistoric Man*, Thames & Hudson, London, 1956, pp. 48-51.

27 L. S. B. Leakey, *Adam's Ancestors*, London, 1934, p. 221, quoted by John Reader *Missing Links: the Hunt For Earliest Man*, 1st American edn., 1981, p. 74.

years before? Or does the irony reveal the predisposition of those involved? *Australopithecus* was an ape, the eminent gentlemen had said; but Leakey's fossils differed hardly at all from *Homo sapiens*, despite their apparent antiquity.<sup>28</sup>

Leakey in his book *Adam's Ancestors*, published in 1934 gave discussion of Peking Man but completely ignored the Taung specimen, which drew comment from Sherwood Washburn, of comparison of the reception of Peking man with that of Taung., 'Dart's paper was published years before Peking was even found! The reaction to the Taung skull was almost nothing but extreme criticism.<sup>29</sup> Leakey's pronouncements on his finds in East Africa would soon be discounted as a result of an independent geologist's tests.<sup>30</sup> Might Trevor-Jones's baboon skulls in some way lead to a firmer support for Dart's earlier assessment of his Taung skull?

Trevor-Jones displaying his baboon skulls, other specimens and the unusual pelvic bone in the presence of Professor Dart, Drs Galloway and Wells, would hear Dart confirm his (Jones's ) own impression of their great scientific value, and utter these prophetic words, 'I'm sure we'll find an *Australopithecus* there', then, after a thoughtful pause added, 'but we'll let someone else look and discover it'.<sup>31</sup> There was no doubt who he had in mind. On 12 August 1936 he wrote: 'My Dear Dr Broom, One of my science students has been digging out fossils from a cave deposit at Sterkfontein and will be delighted to show you what he has found'.<sup>32</sup>

Broom responded enthusiastically to Dart's invitation. He handled and studied Jones's specimens with careful reverence, but on seeing the pelvis he became excited. Jones related, 'We all went upstairs to the museum to compare the pelvis with those of the larger primates in the department. Dr Broom, a most discerning anatomist realised that this pelvis was in fact that of an *Australopithecus*. Broom was given this pelvis and the upper jaw of the ape to take with him.<sup>33</sup> Would Broom be the one to run to ground other Australopithecine remains in the Sterkfontein caves?

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28 John Reader, *Missing Links: The Hunt for Earliest Man*, p. 147.

29 S. L. Washburn, 'Human Evolution after Raymond Dart', in *Human Evolution Past, Present and Future*, (ed.) Phillip V. Tobias, Alan Liss Inc., New York, 1985, p. 4.

30 John Reader, *Missing Links: The Hunt for Earliest Man*, p. 147.

31 Trevor-Jones interview in Johannesburg by F. Wheelhouse 2 April 1973.

32 *Skull Wars* ( video documentary) 1994, Fabulous Discoveries Inc. Toronto, Canada, Cine Nova Production to which the writer contributed information and photos, and holds a copy.

33 Trevor Jones interview by F. Wheelhouse 2 Apl. 1973.

Meantime two other of Dart's students, Harding le Riche and Gerrit W. H. Schepers were also fired with enthusiasm by Dart for scientific research, Schepers advising he was 'especially intrigued by the brain case, the facial structure, the mandible and the hyoid bone, since the phylogenic transformation of these skeletal parts are related to the evolution of the brain'. Because of Dart's pre-eminence as a neuro-anatomist it influenced Schepers to select this field of study as his major activity for a number of years and cover the nervous system of all chordate orders from *Amphioxus* to *Man*. Unaware of Trevor Jones's research on the Sterkfontein baboons, he and le Riche had also visited and collected a baboon skull from those caves, shown it to Dr Broom, who was then digging at Hennops River near Pretoria for fossils and hopefully for an *Australopithecus*. He thought he had found one but it turned out to be the jaw of a huge fossil baboon. Broom would tell the students if they found a more interesting specimen at Sterkfontein, he would accompany them to the site. When Schepers took to him a lump of breccia showing a human-like jaw with teeth, Broom offered 'to work the specimen up expertly' and visit with them the site of its extraction. He met George Barlow the quarry master, learned he had worked at Taung and knew of Dart's discovery and found that by monetary reward Barlow would hold for him any interesting specimens. Nine days later on 17 August, Barlow supplied him with a brain cast, blasted out that same morning. Broom recorded, 'It was clearly the anterior two thirds of the brain cast, one of an anthropoid or ape-man in perfect condition'. His further search that day proved fruitless in that spot, but at another place in the quarry wall he found the top of a skull, extracted it and returned the next day with a team of helpers from the Transvaal Museum. Their fossicking provided the skull base, most of the jaws and teeth and part of the skull roof. His quest was won for the first adult man-ape.<sup>34</sup> ( fig. 77).

However, Trevor-Jones had brought in the first pelvis of an *Australopithecus* and next, Schepers had found the jaw specimen of one with teeth, (P.V.Tobias advises these fossil bones remain unconfirmed) Broom mentions in his book that le Riche and Schepers brought him a baboon skull but seems not to mention the jaw specimen. When asked later if Broom described his specimen, Schepers replied, 'No actually not. His own specimen was a brain case and face of *Plesianthropus* and quite impressive and well preserved'. Schepers states he later presented a paper

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34 Raymond Dart, (ed.) *Beyond Antiquity*, 1963, pp. 66-69; R. Broom, *Finding the Missing Link*, Watts & Co., London, 2nd edn. 1951, pp. 42-45.

on his own specimen before the American Society for Physical Anthropology. Asked if he was annoyed with Dr Broom over 'jumping his claim' so to speak, he acknowledged that he was disappointed, though time itself reconciled their differences and that at that stage he had to take his final exams and complete his major study on the Bantu brain anatomy. He realised Broom was the best man for the job, as he had international standing as a scientist and official financial support and because of his undisputed skill of reading the fossil record—above all he had the time to carry out this work.<sup>35</sup>

Broom painstakingly extracted and cleaned these fragments from the hard matrix, finding these fossil bones tantalizingly soft and difficult to release and that the brain cast originally lacked its rear portion while the face and the side of the head were badly crushed. From such material he adjudged his specimen to be close to that of the Taung specimen and with delight wrote to Dart on 18 September 1936, 'My Dear Dart, You will be interested to hear the progress of Miss Sterkfontein. She has turned out to be a plum'.<sup>36</sup> He initially named his specimen *Australopithecus transvaalensis*, later renamed it *Plesianthropus transvaalensis*, 'near man'; later still it was reclassified as *Australopithecus africanus*.<sup>37</sup>

As was his way Broom briskly prepared his analysis of his specimen and despatched his preliminary account to *The Times*, London, in which paper it appeared on 26 August 1936. He quickly submitted his illustrated articles to *Nature* and to *The Illustrated London News*, both of which appeared on 19 September. *Nature* presented it as 'A new fossil anthropoid skull from South Africa', while in the other press its title read 'On a new ancestral link between ape and man'. As Dart had, Broom would soon learn of the overseas scientists' unbending and critical reaction now to his own discovery of the adult form of *Australopithecus*.<sup>38</sup> John Reader points out, that mainly because of the widely regarded work of Keith and Abel on their

35 Raymond Dart, (ed.), *Beyond Antiquity*, 1963, p. 69; P. V. Tobias, 'Sterkfontein, Excursions, Taung Diamond Jubilee International Symposium, University of the Witwatersrand, Johannesburg, 1985, p. 9 - also mentions other interesting early collections from Sterkfontein caves.

36 *Skull Wars*, (video documentary) 1994, Fabulous Discoveries Inc., Toronto, Canada, Cine Nova Production, quoting R. Broom's letter to R. A. Dart, 18 Sept. 1936.

37 R. Broom, *Finding the Missing Link*, Watts & Co., London, 2nd edn. 1951, p. 45; Dart with Craig, *Adventures with the Missing Link*, pp. 77, 211; John Reader, *Missing Links: the Hunt for Earliest Man*, p. 124.

38 R. Broom, *Finding the Missing Link*, p. 45; Raymond Dart, (ed.), *Beyond Antiquity*, p. 64.

assessment of *Australopithecus* as not being ancestral to mankind but akin to either the gorilla or chimpanzee, by 1937 interest in the South African claims had dwindled considerably.<sup>39</sup>

Dart and Broom, however, were now more certain than ever of their specimens' human lineage and Dart found immense delight and satisfaction that Broom had at last, by his extraction of an adult form now proved him correct in his earlier definitions of the Taung skull. As a result his spirits were lifted to a high level and even more so as another event in his life brought him more happiness. He wrote, 'By a curious coincidence, assurance re-entered my domestic life at the end of 1936, the year Broom discovered *Plesianthropus*'. He had on 28 November 1936 married Marjorie Frew, the head librarian of the Witwatersrand Medical Library, the ceremony taking place in the home of Marjorie's father, Dr Alexander Frew, Medical Officer for the East Rand Proprietors Mines in Johannesburg. Marjorie Gordon Frew born at Boksburg, (a suburb of Johannesburg), in April 1906 was appointed to the medical library on 1 May 1932 and well remembers that her first meeting with Raymond Dart was one of confrontation and altercation over a car-parking space at the University.<sup>40</sup> (figs. 76,77).

Meanwhile Dart had been involved with the Kalahari Desert hunter, Donald Bain in the materialization of his idea of bringing seventy Bushmen to the Johannesburg Empire Exhibition, held from 15 September 1936 to 15 January 1937, accompanying Bain beforehand to the Kalahari to select these people for purity of race. As a follow up in 1937 he, with other scientists from the University of the Witwatersrand, would spend a month on the first full study ever made of these people of their language, music, culture and physical form.<sup>41</sup>

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39 John Reader, *Missing Links: the Hunt for Earliest Man*, p. 124.

40 Dart with Craig, *Adventures with the Missing Link*, p. 72; Marjorie Dart interview by F. Wheelhouse, Johannesburg, 7 Feb. 1973; Diana Dart Graham, Sarasota, Florida, USA, tape recording to F. Wheelhouse 10 Oct. 1993, advises Dr Alexander Frew graduated in medicine at Edinburgh University, was physician in Boer War to British troops. He returned to South Africa with his wife as a physician on the reef mines in Johannesburg. Taking his wife and daughter to England, he served in World War 1 - only his daughter returned to South Africa with him. Marjorie attended Roedeon Private School, Johannesburg, then was further educated in London and Scotland as a teacher and librarian.

41 Dart with Craig, *Adventures with the Missing Link*, pp. 66-69; *The Times*, London, 15 Sept. 1936; *The Listener*, Johannesburg, 1 July 1936; Frances Wheelhouse when a girl, attended the Johannesburg Empire Exhibition with her sister and aunt and saw

On 30 November 1936 the indefatigable Robert Broom turned seventy years of age. Sadly soon for Dart and Broom they would hear news of the death of their beloved colleague Sir Grafton Elliot Smith on 1 January 1937. It is not known whether Elliot Smith had heard or read of Broom's recent discovery while ill for some time. Possibly one of his last letters written to James T. Wilson was on 30 November 1936 from the Queen Mary's Hospital, Sidcut, Kent in which he advised he may go to Edinburgh for treatment.<sup>42</sup> Wilson who had retired from the Cambridge Chair of Anatomy in 1934, aged seventy-four years would aid extensively W. P. Dawson by his personal knowledge and friendship with his protégé Elliot Smith and by his huge volume of correspondence and details of his monumental scientific achievements for Dawson's edited work, *Sir Grafton Elliot Smith : a Biographical Record by His Colleagues*, published in 1938 by Jonathan Cape, London.<sup>43</sup>

While scientists in England reflected little interest in Broom's vital discovery, conversely the Americans clamoured for news of it and invited him to address their Congress on Early Man in Philadelphia in 1937. At the end of January 1937 Broom would not miss the opportunity while voyaging via London, there to strongly promote his latest outstanding adult *Australopithecus* discovery, vividly illustrating his lecture with lantern slides to the Zoological Society. In America at Philadelphia on 20 March, anthropologists heard his stunning lectures, among them Hrdlička, Hooton, Gordon Childe, von Koenigswald, Teilhard de Chardin, Miss D. Garrod, McCown and Clinton Hart Merriam. After Philadelphia, Broom travelled widely throughout America giving in all, twenty-eight lectures, the Americans honouring him in June 1937 at Columbia University with an honorary DSc. degree. Importantly while there he gained the interest of Dr W. K. Gregory and Dr Milo Hellman of the American Museum of Natural History in New York, both distinguished authorities on primitive human dentition, who showed interest in shortly visiting South Africa to study the specimens found

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the Bushmen Dart brought from the Kalahari; Bruce K. Murray, *Wits the Early Years*, , pp. 183, 289.

42 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 7, G. Elliot Smith letter to J. T. Wilson, 30 Nov. 1936; Dart with Craig, *Adventures with the Missing Link*, p. 72.

43 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 8, Warren Dawson letter to J. T. Wilson, 22 Oct. 1937; John Atherton Young, Ann Jervie Sefton, Nina Webb, eds., *The Centenary Book of the University of Sydney Faculty of Medicine*, University of Sydney Press, 1984, p. 279; *The Medical Journal of Australia*, reprint. 29 Dec. 1945, p. 10.

there.<sup>44</sup> Few others however were prepared to change their ideas about Dart's early work.<sup>45</sup>

When Broom returned to South Africa in August 1937 he found Barlow now quarrying thirty feet further down the hill at Sterkfontein. Monetary exchange with Barlow realised a beautiful maxilla of a female with excellent teeth and part of the face of an old male with badly worn teeth plus the lower end of a femur and bone of the wrist, along with numerous animal bones during the period to May 1938. Then on 8 June, for two pounds cash, Barlow gave him a palate with one molar tooth in place, but when Barlow, and separately his workers, refused to divulge its place of origin, Broom's invective to Barlow brought information that schoolboy, Gert Terblanche, a Sunday volunteer tourist guide, had supplied it. Broom left immediately on foot for the boy's home, 3 kilometres away and found from his mother and sister that he was at school. The sister, however, showed Broom the boy's discovery site on a hill at Kromdraai farm, 1.5 kilometres distant. There Broom picked up fragments of a skull, also two teeth, then headed for the school, a further distance of 6 kilometres. In forthright manner he saw the Headmaster, had the boy empty his pockets, from which came 'four of the most wonderful teeth ever seen in the world's history', as Broom put it.<sup>46</sup> He paid the boy for the teeth, gave talks to the class until school closing time, then with Gert Terblanche headed back to the Kromdraai hill. There the youngster drew from his hiding place two more lower jaw teeth. In the next few days Broom had now gained from the site practically the whole of the left maxilla, the malar, all the left temporal bone, most of the left of the sphenoid and part of the occiput and parietal and all the upper teeth except the canines and incisors and a third molar, but all these were represented by sockets. He also had a complete horizontal ramus of the right mandible with all the premolars and molars. He had scored a bonanza. Restoration of these parts showed Broom he had a larger specimen of 'ape-man' (as he was wont to call his finds, whereas Dart called his a 'man-ape'), that it had a flatter skull, more powerful jaws and larger teeth, in fact it was far more robust. (fig. 78). He named it *Paranthropus robustus* (meaning, 'robust

44 Dart with Craig, *Adventures with the Missing Link*, pp. 74-75; University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 9, R. Broom letter to J. T. Wilson, 13 Mar. 1938; R. Broom, *Finding the Missing Link*, pp. 46-47.

45 John Reader, *Missing Links : the Hunt for Earliest Man*, p. 124.

46 R. Broom, *Finding the Missing Link*, p. 50; *Skull Wars*, (video documentary), Fabulous Discoveries Inc. Toronto, Canada, Cine Nova Production, 1994.



equal of man'), the first time the term robust had been applied in this respect. Much later it would be reclassified as *Australopithecus robustus*. Both *Nature* and *The Illustrated London News* would publish his work on it; *Nature* as, 'More Discoveries of *Australopithecus* and the other press as 'The Missing Link no Longer Missing'.<sup>47</sup> His assessment of the jaw bones as similar to those of humans and not apes, his estimate of its brain capacity of 650 cc and his naming of it drew criticism from the English scientists. Dr A. J. E. Cave of the Royal College of Surgeons thought his now determined two genera was on 'extremely slender grounds'.<sup>48</sup>

Some interesting facts have come to light when Broom sent this article to *Nature*. The editor sent it to Sir Arthur Keith, who indicated he was unable to review it and recommended Wilson carry this out. Keith's letter to Wilson of 11 August 1938 from his Buckston Browne Farm, Downe, Farnborough, Kent, read:

My Dear Wilson, Much as I should like to - you have got to do Broom's paper. Hence I send it back. There is no doubt of its importance - I notice the mastoid is anthropoid, so is the occip. condyle .. base of skull a bit crushed. An amazing dentition. Besides I'm down for 5 communications already. So I have written to R. U. Sayce urging him to find a place for you. I have written to Manchester - but Lady Boyd Dawkins - who is with me - thinks Sayce is already in Cambridge: as you know Sayce is responsible for anthrop. programmes. I thought of having slides done for you - but the photos are safer with you than with me.<sup>49</sup>

Two subsequent pieces of correspondence support this event, one from St Johns College, Cambridge of 15 August 1938 with the signature E. M. S. Daniel:

Dear Professor Wilson, I was very glad to get your letter and to know that you will still be able to communicate this most important communication of Broom's. I was sorry I was out when you called. I have written to Sayce, the recorder of Section H, and given him all particulars about the paper. You should hear from him in a day or so.

I can only regret again that you have been put to such

47 R. Broom, 'More Discoveries of *Australopithecus*', *Nature*, vol 141, 1938, pp. 82-89; R. Broom, 'The Missing Link no Longer Missing', *The Illustrated London News*, vol. 193, pp. 310-11.

48 R. Broom, *Finding the Missing Link*, p. 51.

49 Shellshar Museum Archives, University of Sydney Medical School, Arthur Keith letter to J. T. Wilson, 11 Aug. 1938.

trouble and inconvenience over this paper, and say that I shall look forward to hearing about the skull with the greatest of interest.<sup>50</sup>

The other correspondence is a memo from the editor's desk at *Nature* of 15 August 1938:

The editor of *Nature* presents his compliments to Professor J. T. Wilson and confirming his telephone call of this morning begs to say that he has handed to the blockmakers three photographs and three drawings which accompanied Dr Broom's article upon his recent discoveries in South Africa, with instructions to prepare blocks and also lantern slides. The lantern slides will be sent to Professor Wilson...and the blockmakers have promised that Professor Wilson will receive them at Cambridge by Thursday evening.

The memo further advised that Broom's article had been sent to the printers with instructions to send six proofs to Professor Wilson with all the illustrations and legends for his proof-reading and return to the printer with my corrections. Further advice was the editor hoped to print Dr Broom's article in *Nature* on 27 August and hoped also the arrangements would suit Wilson. Sir Arthur Keith's letter was also returned to Wilson.<sup>51</sup>

It might be questioned whether Sir Arthur Keith's refusal to attend to Broom's material by indicating he had too much to do, was genuine. Might he have thought the South African discoveries were getting too close to be denied the recognition they deserved? Wilson, ever steadfast for scientific merit, had no hesitation in supporting this paper's presentation from a remarkable fellow scientist of nearly fifty years standing. Is the tide in England seen to be slowly turning for Dart and Broom, support also coming from St Johns College, Cambridge, and with no doubt this time in the mind of the editor of *Nature* that Broom's paper must be published?

Most encouraging to Dart and Broom was the strong support given in 1938 by Drs Gregory and Hellman in lectures and journals after their visit to South Africa and examination of all available *Australopithecus* specimens. Whereas Gregory in 1932 was totally opposed to Dart's earlier findings, now he with Hellman acquiesced in the importance of the Taung and Sterkfontein

50 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 9, E. M. S. Daniel, St Johns College, Cambridge, letter to J. T. Wilson, 15 Aug. 1938.

51 University of Sydney Archives, The J. T. Wilson Family Archives, P. 162, series 5, item 9, Editor of *Nature*, memo to J. T. Wilson, 15 Aug. 1938.

fossils for the understanding of human evolution especially in regard to dentition. Dart recorded:

Their opinions carried great weight all over the world and marked the first unqualified recognition by overseas authorities of my original opinions on the omnivorous-carnivorous character of the dentition.<sup>52</sup>

At long last both Dart and Broom would hear praise. Gregory in his talk in Johannesburg would acknowledge the whole world's indebtedness to both Dart and Broom, 'for their discoveries which have reached the climax of more than a century of research on that great problem, the origin and the physical structure of man'.<sup>53</sup>

By virtue of Broom's new finds, a paper written in 1937 by Dr Franz Weidenreich (Black's successor in Peking) advising of the intimate relationship between the dentitions of *Australopithecus* and *Sinanthropus*, also Gregory and Hellman's support in 1938—for Dart, 'marked the turning point in attitudes of most scientists in America, Britain and the Continent'.<sup>54</sup>

But what of the big-brained fossil skulls of Europe and the Orient which many scientists firmly held that humanity began with the possession of a large brain? Where must they now fit in, in the light of a small-brained creature with a mosaic of hominid affinities and poised on the brink of humanity? With the likes of Piltdown Man still firmly entrenched, recognition of the South African proto-humans seemed far from being won!

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52 Dart with Craig, *Adventures with the Missing Link*, p. 75.

53 W. K. Gregory, 'The Bearing of Dr Broom's and Dr Dart's Discoveries on the Origin of Man', *Annual Proceedings, Ass. Sci. Tech. Soc. S. Afr.*, Johannesburg, May 1939, pp. 25-54, partly quoted in Dart with Craig, *Adventures with the Missing Link*, p. 75.

54 Dart with Craig, *Adventures with the Missing Link*, p. 78.

## CHAPTER 10

### WAR CLOUDS

While American anthropologists Dr W. King Gregory and Dr Milo Hellman received their conversion in Johannesburg in 1938 by personal examination of the raw fossil Australopithecine material which Dart and Broom had extracted from the earth's remote past, might a similar conversion happen to other scientists, particularly those in Britain? Might even other factors loosen their rigidly held ideas of human evolution? Might any English scientist also be prepared to make a trip to South Africa, as had the American anthropologists to analyse, without prejudice, the fossils found there?

In 1933 at Steinheim, Germany, were unearthed, cranial remains of an early human and in England in 1935-1936 more cranial remains were found, a fossilised human occipital and the left parietal bone of the same skull in situ at a depth of 7.3 metres below the surface in the middle gravels of the Thames River 30-metre terrace at Swanscombe, Kent. Association with unabraded flint implements, defined as such by the renowned French priest-archaeologist, the Abbé Breuil, to be of Acheulean type, together with bones and teeth of numerous extinct mammals deposited between the Lower-Middle Pleistocene, further enhanced their importance when discovered by a London dentist and amateur archaeologist, Alvan T. Marston.<sup>1</sup>

Sir Arthur Keith and Sir Arthur Smith Woodward were among the first to see these remains, Keith initially judging them to be *Homo sapiens*—not unlike Piltdown Man, though of later form and in the line directly from this form, while Smith Woodward considered them as early Neanderthaler or yet another unknown human form. This discovery however really set the cat amongst the pigeons and raised ideas in Keith's mind that they might give him a new understanding to 'my old Piltdown problems'.<sup>2</sup> He would spend many months, from October 1937 on yet another reconstruction of the

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1 W. W. Howells, *Mankind in the Making*, Martin Secker & Warburg Ltd., London, 1960, pp. 216-19; Frank Spencer, *Piltdown : A Scientific Forgery*, Natural History Museum Publication, Oxford University Press, London, 1990, pp. 123-24; John Reader, *Missing Links: The Hunt for Earliest Man*, Little, Brown & Co., Boston, 1981, p. 75.

2 Arthur Keith, *An Autobiography*, Watts & Co., London 1950, pp. 643-45.

Pitldown casts, this time in relation to the 'new' bones from Swanscombe. In so doing he would discover the error of his earlier reconstructions, and in turn realise that Elliot Smith had been correct in his estimation that an extreme degree of asymmetry had existed in Pitldown. Keith wrote: 'I had supposed, as did all my fellow anatomists, that the two sides of the head of ancient man would be symmetrical and of equal size; asymmetry of the human brain and head we had presumed to be a recent specialization'.<sup>3</sup>

Now Keith could lessen the cranial capacity of Pitldown by just over 100 cubic centimetres.<sup>4</sup> Sir Grafton Elliot Smith had died on 1 January 1937 but earlier Alvan T. Marston had sought his advice on his newly found Swanscombe skull. Elliot Smith noted the exceptional size and form of the visual areas upon the two hemispheres and that these were definitely simian and pointing to a much more primitive stage than *Eoanthropus* (Pitldown Man), also that while this new skull was suggestive of Pitldown it was much more primitive.<sup>5</sup>

By 1938 Keith published the fruits of his endeavours on 'exploring all aspects of the Pitldown-Swanscombe problem.' His article contained thirty-two drawings and 15 000 words and pointed out, 'seeing that I was dealing with the earliest known representatives of man in Western Europe, I did not regard my time as misspent. These early inhabitants of England had brains of medium size—about 1350 c. c.'<sup>6</sup>

Meanwhile Alvan T. Marston had been busy publishing articles in different journals, the *British Dental Journal* of June 1936, the *Journal of the Royal Anthropological Institute* in 1937, an earlier preliminary note in *Nature* in 1936, and he also gave talks, one to the Royal Society of Medicine on 23 November 1936. He raised facts and implications of his discovery commenting in his *Nature* article on 1 August 1936, 'In its relation to the other fossil types the Swanscombe skull is to be regarded definitely as a precursor of the Pitldown type'<sup>7</sup>.

Marston then requested a 'research committee' to be appointed to

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3 *ibid.*, p. 644.

4 *ibid.*, p. 644.

5 Frank Spencer, *Pitldown: A Scientific Forgery*, pp. 124-25.

6 Arthur Keith, *An Autobiography*, p. 645.

7 Alvan T. Marston, 'Preliminary Note on a new fossil Human Skull from Swanscombe Kent', *Nature*, vol. 138, no. 3483, 1 Aug. 1936, pp. 200-201.

investigate his claims for the Swanscombe skull and the items found with it. While the Royal Anthropological Institute research committee, consisting of ten men, mostly scientists, found his Swanscombe skull and associated tools and animal remains to be of possibly Middle Pleistocene times, it could not decide on its taxonomic status. Frank Spencer points out, 'The report, however, made no mention of Marston's controversial views on the relationship between Swanscombe and Piltdown, but did note that the remains had been presented by Marston to the Trustees of the British Museum'.<sup>8</sup> With these remains now ensconced in the British Museum, perhaps the truth about this skull might never be unmasked. It seems there may have been a hidden agenda here!

Meantime in South Africa, World War 11 from August 1939 put most of the fossil digs in the Sterkfontein Valley and the mining of limestone to an end. George Barlow the mine manager had also died in that year. Dart realised the valuable findings of the South African Australopithecines had now to be comprehensively recorded, and the best chance might be during these war years when Broom was not excavating. Except for organising the clearing out of a pocket of earth at Kromdraai in February 1941 by his new assistant, John T. Robinson, where more valuable bone fragments and teeth were found, Broom would engage in few more digs in this period.<sup>9</sup>

After the acknowledgment of Broom and Dart's work by Drs Gregory and Hellman in 1938, Dart wrote, 'Their praise did not, however, tempt me back into the search for more links. This had become almost exclusively Broom's field and his tireless efforts were reaping rich rewards'.<sup>10</sup> Many of Dart's colleagues and students, however, thought Dart should have been the one to discover those Sterkfontein fossils, not Broom. Lawrence H. Wells philosophically mentions:

Some of us at the time regretted his intervention, but in retrospect it appears clearly to the good that the great discovery should have fallen to one free to exploit it, not burdened as Professor Dart was at the time with academic and administrative responsibilities.<sup>11</sup>

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8 Spencer, *Pittdown: a Scientific Forgery*, p. 127.

9 Robert Broom, *Finding the Missing Link*, Watts & Co., London, 2nd edn. p. 55; Dart with Craig, *Adventures with the Missing Link*, p. 79; Dart, 'Robert Broom—His Life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p. 15.

10 Dart with Craig, *Adventures with the Missing Link*, p.75.

11 Lawrence Herbert Wells, 'One Hundred Years: Robert Broom 30 November, 1866—6 April, 1951', *S. Afr. J. Sci.*, vol. 63, no. 9, Sept. 1967, p. 364.

However, might Dart change his mind and become personally involved? This would seem to be so. Dart knew full well Broom's capacity to describe the fossil bones, but Broom himself admitted he had little or no experience in describing most importantly the brain casts, whereupon he asked Dart to do so on his behalf. Dart willingly agreed, but 'decided to withdraw after reading certain remarks by E. A. Hooton, in his book *Apes, Men and Morons*'.<sup>12</sup> Dart noted the following paragraphs which so concerned him:

The tendency towards aggrandizement of a rare or unique specimen on the part of its finder or person to whom its initial scientific description has been entrusted, springs naturally from human egoism and is almost ineradicable.<sup>13</sup>

Dart further noted, that Hooton went on to point out the errors in interpretation that can arise through enthusiasm, ignorance, isolation and:

the psychological conflict in which the describer is torn between his effort to find primitive, unique or anthropoid features which will enable him to place his specimen nearer to the apes than any previously recorded, and his equally proverbial urge to demonstrate the direct and central position of his new type in the ancestry of modern man<sup>14</sup>.

Hooton in conclusion wrote:

A dispassionate interpretation of new fossil evidence is usually obtainable only when one awaits the reworking of the material by persons not emotionally identified with the specimen.<sup>15</sup>

This was too much for Dart. To him it was Mapungubwe all over again. Thus he felt in the interest of this vital work he was bound to place his material in the hands of an investigator who was uncommitted. His decision swiftly followed. He would hand over his Taung specimen to Broom for this purpose and his descriptive material of its endocranial cast to Gerrit W. H. Schepers, one of his most brilliant graduates who had recently been appointed Professor of Anatomy at the University of Pretoria. Dart had enormous respect for Schepers' ability in this neurological field. His research to date had been outstanding, and, with Broom in the department

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12 Dart with Craig, *Adventures with the Missing Link*, pp. 78-9.

13 Dart with Craig, *Adventures with the Missing Link*, p. 79, quoting from E. A. Hooton's *Apes, Men and Morons*, New York, Putnam, 1937, p. 112.

14 *ibid.*

15 *ibid.*

each week lecturing to his science students and with both having access to all the comparative material there, collaboration would and did produce a massive classical analysis of all the Australopithecine specimens gathered to date, including his own Taung skull. Dart, nevertheless made himself available for advice and consultation. For Schepers with his earlier disappointment over his own Sterkfontein Australopithecine discovery, which he had handed to Broom, now came vindication and greater opportunity. Dart in his wisdom had realised this.<sup>16</sup>

Not only work at Sterkfontein was put on hold for war's duration, but other enquiries also. H. B. S. Cooke (later Professor) had come back to South Africa from Cambridge in 1936 and while working as a geologist with a mining company early in 1937 found some excellent stone implements in an eroded valley east of Malips Drift in the Northern Transvaal. On showing these to Professor C. R. van Riet Lowe, recently appointed Director of the South African Bureau of Archaeology at the University of the Witwatersrand, he was taken to the Sterkfontein caves. There he met Dr Broom, after which with a letter of introduction from van Riet Lowe, Cooke went to Victoria Falls to meet Desmond Clark, fresh out from Cambridge. Clark showed him the gravel terraces full of stone hand-axes he was working on and some elephant tooth fragments as well. Later Clark sent him more elephant teeth, which Cooke, knowing that Professor Dart had discovered mammoth teeth in the Vaal River in 1929, took to him. Inspired by Dart's encouragement to tackle the description of the teeth and tools he had gathered, Cooke was disarmingly lured into the field of palaeontology. In this field he would make enterprising contributions, some in collaboration on some of Dart's research. In 1938 he accompanied van Riet Lowe and Dr Broom to the Makapansgat Valley to see the Cave of Hearths, so named in 1935 by van Riet Lowe, who discovered a thick deposit of hand-axe tools there. In 1938 all was planned for Dr Lawrence Wells, van Riet Lowe, his assistant and Cooke to co-operate on a number of projects in this prospective valley—a new venture whereby collaboration between anthropologist, archaeologist and geologist might dovetail and yield enhanced profit. A new spirit of teamship was developing. These plans, as were many others, were interrupted by the

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16 Dart with Craig, *Adventures with the Missing Link*, p. 79; Dart, (ed.), *Beyond Antiquity: A series of Radio Lectures on the Origin of Man*, the South African Broadcasting Corporation, Johannesburg, 1963, pp. 68-9, 72.



beginning of World War 11.<sup>17</sup>

As was the case with other universities, Wits lost staff and students to the armed forces, those left behind, nevertheless, were engaged in valuable war work. Dart himself, in addition to his academic duties, established, trained and commanded personnel for Ambulance Units within the University. He had been actively associated from 1925 with the South African Field Ambulance Services and would serve in these long after the war. (fig .79).<sup>18</sup>

Two children were born to the Darts during the war years, a girl, Diana Elizabeth in 1940 and boy, Galen, eleven months later in 1941, prematurely born at six and a half months, and weighing little more than a kilogram. Tragically a spastic, he barely survived the two months' incubation treatment. The boy's condition impelled Dart from that time and over a lifetime to seek a treatment of cure or relief for his son's condition. The strain on the Dart family was immense and this, coupled with his demanding university work and war duties, forced Dart in 1943 under doctor's orders to relinquish for a year the reins of his all encompassing load of duties, including the deanship, to allow him to recover from his nervous and physical exhaustion<sup>19</sup>. (figs. 80-82). His wife Marjorie, ever at hand, devoted wife and mother, hostess to scores of scientific visitors who would stay over the years at the Darts' home; as well, his secretary and advisor, would in addition type and edit his abundant production of scientific papers. Dart acknowledged he could never have achieved what he did without her devoted assistance. In the years that followed his illness and in order to protect him from undue strain, she would manage his programme of activities by means of a strict regimen, with which few would dare interfere.<sup>20</sup>

In his intensive search for help for his son's condition, Dart became inspired by the Alexander Technique being taught in Johannesburg by Irene Tasker in the 1940s, classes which he and his children attended. This method for physical improvement was unique and brilliantly developed by

17 H. B. S. Cooke, in Dart, (ed.), *Beyond Antiquity*, pp. 70-72.

18 Phillip V. Tobias, 'Homage to Emeritus Professor Raymond Arthur Dart on his 75th Birthday: 4 th February 1968', *S. Afr. J. Sci.*, vol. 64, no. 2, Feb. 1968, p. 44.

19 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 11, R. A. Dart letter to J. T. Wilson, 15 Oct. 1942.

20 R. A. Dart interview by F. Wheelhouse, Johannesburg, 1 Mar. 1973.; F. Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile*, 1983, pp. 25, 29, 40, 52, 57-9, 63, 84, 88-9, 91-2, 97; Diana Dart Graham recorded tape to F. Wheelhouse ,11 Nov. 1933.

*Frederick Matthias Alexander, an Australian from Tasmania*. By a series of original experimentation of movements, Professor John Dewey of Columbia University, New York, United States of America, confirmed that Alexander 'demonstrated a new scientific principle with respect to the control of human behaviour, as important as any principle which has ever been discovered in the domain of external nature'. Alexander, an actor whose career was almost destroyed late last century by unwitting misuse of his muscles and voice, devised the means to view and analyse his wrong movements and then invented a most successful remedy for the correction of these faults. So impressed were the medical men in Tasmania, they armed him with letters of introduction to their medical colleagues in London, and in 1904 he set out for that city to reveal his Technique. There his teachings grew, collaboration with medical men followed and gradually the value of his work became recognised. He wrote many books on the subject, gained an immense following from people of world renown and the community in general and trained teachers in his Alexander Technique who dispersed internationally. Irene Tasker, an honours graduate of Girton College, Cambridge, became one of his most effective teachers.<sup>21</sup>

Dart found in his own course of lessons from Irene Tasker that her manipulative demonstrations showed him how exaggerated spinal curvature (manifested as 'round shoulders') was due to fixation because of improper or unco-ordinated management of his own body in rest and movement, and that these were capable of improvement. Later when in London Dart would meet and have lessons from the man himself, Frederick Matthias Alexander. Over the years he would promote his excellent work and write much about this exceptional man, and himself contribute many important scientific papers from a neuro-muscular-anatomical aspect. Among these and shortly to follow in 1946 Dart contributed 'The Postural Aspect of Malocclusion' which discussed the theory that malocclusion (abnormal alignment between the teeth in opposing jaws) is a postural defect due to imbalance of the musculature of the head and neck, and is related to bodily posture as a whole. In 1947 Dart published 'The Attainment of Poise', which discussed the meaning of 'poise' and of its nature and mechanisms. In 1950 he wrote, 'Voluntary musculature in the human body : The double spiral arrangement'

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21 Dart, *An Anatomist's Tribute to F. Matthias Alexander*, The Shelldrake Press, London, 1970, pp. 1-5; Rosslyn McLeod, *Up From Down Under : The Australian Origins of Frederick Matthias Alexander and The Alexander Technique*, McLeod, Canberra, Victoria, 1994, pp. 1-148.

which covered the embryology of human skeletal muscles and their double spiral arrangement, with particular reference to postural deformities. By this work he would help his son to a degree and others suffering likewise. Dart himself would devise many additional exercises to supplement those of Alexander's. These became known as The Dart Procedures and in later years in America he would contribute invaluable practical methods of treatment of the physically and mentally impaired.<sup>22</sup>

While Frederick M. Alexander gained the support of many medical men, he also gained enemies in this profession. In Johannesburg in the 1940s his methods were attacked and Miss Tasker spurned for her teaching of them. In a paper read at the South African Association for the Advancement of Science on 29 June 1943 in Johannesburg, one, Dr Jokl claimed not a single medical man of scientific standing was a supporter of Alexander's ideas. Later he and others condemned Alexander as a charlatan and a quack and claimed him dishonest, whereupon Alexander sued for defamation. A court case ensued with some hearings in London. The case in Johannesburg began on 16 February 1948, attracted front page news coverage and a packed courtroom. Judgment came down in Alexander's favour, a subsequent appeal was dismissed, costs to be met by Jokl, Cluver and Clark. Today the Alexander Technique is taught around the world with ever increasing popularity. Such is the relevance of Dart's related papers mostly written over fifty years ago—some used as evidence in the Johannesburg trial—that as recently as 1996 they were republished in book form.<sup>23</sup>

In 1944 Dr Bernard Price an electrical engineer and philanthropist,

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- 22 Dart, *An Anatomist's Tribute to F. Matthias Alexander*, pp. 1-5; Dart, 'The postural aspect of malocclusion', *Journal Dental Association of South Africa*, vol. 1, Sept. 1946, pp. 1-21; Dart, 'The Attainment of poise', *S. Afr. Med. J.*, vol. 21, Feb. 1947, pp. 74-91; Dart, 'Voluntary musculature in the human body: The double spiral arrangement', *British J. of Phys. Med.*, vol. 13, no. 12, Dec. 1960, pp. 265-68; Dart, *Skill and Poise : Articles on Skill, Poise and the F. M. Alexander Technique*, Stat Books, London, 1996, pp. 1-191; Marian Goldberg, (ed.) *Beginning from the Beginning: The Growth of Understanding and Skill*, Joan and Alexander Murray in conversation with Kevin Ahern and Marian Goldberg on the evolution of the Dart Procedures and beyond, The Alexander Technique Centre of Washington, DC, 1996, pp. 66-106.
- 23 Norwood Coaker, KC., 'A Review of the Case of Alexander v Cluver, Jokl & Clark', *The Commercial Law Reporter: The Business Man's Law*, Juta & Co. Ltd., Johannesburg, 1949, pp. 650-662; Alexander Murray Urbana, Illinois, USA, letter to F. Wheelhouse, 24 Dec. 1996; Dart, *An Anatomist's Tribute to F. Matthias Alexander*, 1970, pp. 5-35; Dart, *Skill and Poise : Articles on Skill, Poise and the F. M. Alexander Technique*, Stat Books, London, 1996, pp. 1-191.

heard a talk by Dr Broom on the need to collect and preserve the priceless Karroo fossils. He would respond generously with finance towards this end and later also for the other fossil areas and their collections and endow the formation of the Bernard Price Institute for Palaeontological Research within the University of the Witwatersrand. Shortly thereafter in July 1945 one of Dart's medical science students, Phillip Vallentine Tobias (fig. 83), would lead a group of twenty students to the Makapansgat Valley in the Central Transvaal. His instruction from Dart was to ascertain while there, whether the bones in the grey breccia he had received from Mr Eitzman in 1925, had in fact come from the Cave of Hearths containing stone hand-axes. Van Riet Lowe had frequently visited this cave, often in the company of the Abbé Breuil, the famous French archaeologist, who had worked in China, and described this cave as 'a second Choukoutien'. Breuil, courtesy of General Smuts was rescued from Spain after France fell to the Germans in World War 11, was marooned in South Africa during the war. On his first visit to South Africa in 1929 to the British Association for the Advancement of Science meeting he was influential in promoting National Monuments in that country - the Cave of Hearths being declared one later in 1936.<sup>24</sup>

Phillip Tobias returned with news that the 1925 bones had come, not from the Cave of Hearths but from a limeworks site a mile distant down the valley. There he found no implements but something far more significant—the skull of a fossil baboon of the type Trevor-Jones had brought into Dart in 1936 from Sterkfontein. Dart immediately realised the site's importance. Josephine Salmons, Trevor-Jones and now Phillip Tobias had brought Dart the same type of baboon skulls in 1924, 1936 and now in 1945, respectively from Taung, Sterkfontein and Makapansgat, almost a decade separating each retrieval, and now denoting to Dart, these baboon skulls as a marker characteristic of Australopithecine deposits.<sup>25</sup>

An interesting exchange took place between student and professor. Tobias queried Dart, 'Doesn't this mean, sir, that Makapansgat may be far

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24 Dart with Craig, *Adventures with the Missing Link*, pp. 83, 89-92; Dart, 'The Abbé Breuil and the Osteodontokeratic Culture', *Diputacion Provincial De Barcelona, Instituto de Prehistoria Y Arqueologia*, 1964, p. 348; Dart, 'Thirty Years (1924-1954) Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 295.

25 Dart with Craig, *Adventures with the Missing Link*, pp. 90-1; Tobias, *Dart, Taung and the 'Missing Link'*, p. 49; Dart, (ed.) *Beyond Antiquity*, 1963, p. 73; Dart, 'Thirty Years (1924-1954) Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May, 1955, p. 295.

older than you or anyone else had imagined?' To which Dart replied, 'It does indeed, it certainly looks that way'. Tobias further questioned, 'Then doesn't this tempt you back into the field of anthropological research?' Hesitatingly Tobias added, 'It might even prove to be contemporaneous with Sterkfontein'. Dart later wrote that it was as if Tobias had read his thoughts. In Dart's mind now was the thought that this site might well yield a more complete man-ape than found by Broom. Dart led Tobias to his workshop where he took down his hammers, chisels and other anthropological tools which had lain neglected for so many years. An excited Dart addressed Tobias, 'You have my answer'. Dart would relate Tobias 'was responsible for thrusting me back into the maelstrom of man's beginnings'. To that time he had little thought he would again participate in the search and in so doing become the storm centre of yet another anthropological controversy.<sup>26</sup>

September 1945 was the next holiday break and in that Spring, Dart took Marjorie, his daughter Diana aged five and Galen aged four and the whole of the anatomy science class to camp under canvas in the Makapansgat Valley. Even while there Dart would continue to put Galen through his rigorous routine of exercises on the cave's dusty floor—some thought, perhaps too rigorous! While there the group would ransack the limeworks dumps for likely pieces of bone-bearing grey, pink or red breccia. The story of Dart's discoveries there was yet to unfold!<sup>27</sup>

During the war years Broom and Schepers had completed their massive *magnum opus* on the South African Australopithecines. However its publication seemed doubtful due to lack of funds until Dart suggested the authors approach Field Marshal Smuts for possible financial assistance. Smuts, so busy with his duties as Prime Minister, war duties and head of South Africa's armed forces, positively applied his interest. He arranged funds for this publication through the establishment of a national body for research projects on behalf of the government for research generally to be subsidized. Money for publication came through the National Research Council (later South African Council for Scientific and Industrial Research) and Smuts generously spared time to write the foreword for Broom's and Schepers' book,<sup>28</sup> *The South African Fossil Ape-Men: The*

26 Dart with Craig, *Adventures with the Missing Link*, pp.83, 91-2.

27 Dart with Craig, *Adventures with the Missing Link*, p. 92; Phillip V. Tobias interview by F. Wheelhouse, Johannesburg, 13 Feb. 1973.

28 Dart with Craig, *Adventures with the Missing Link*, p. 80.

*Australopithecinae*, mentioning in part:

I confess I find Broom's apes, from a human point of view, much more intriguing than even his mammalian reptiles, and I am sure that many others, who like me are not scientific experts, will share my interest in the discovery of these long-lost relatives of the human-race divine.<sup>29</sup>

While the South African acceptance of this work was unbounded, what then might be the overseas response to this vital comprehensive work?

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29 Dart, 'Robert Broom—His Life and Work', *S. Afr. J. Sci.*, vol 48, no. 1, Aug. 1951, p. 14, quoting Field Marshal Smuts.

## CHAPTER 11

## TAUNG CHILD'S EXTENDED FAMILY

Field Marshal Smuts had arranged for the safe passage from Spain in 1941 of the Abbé Breuil to South Africa. The Abbé had come there first in 1929 for the British Association of Advancement of Science meeting and had made firm friends with Smuts and many scientists there, including Raymond Dart. (fig. 84). From that time he had given valuable advice and service to South Africa the country of his refuge. Influenced by Breuil, Smuts by 1934 had legislated for the protection of Historical Monuments and had set up in 1935 the Bureau of Archaeology (later the Archaeological Survey of the Union of South Africa), which body, by 1941 had listed in that land 1,766 painting and engraving sites and in the next decade an additional 172.<sup>1</sup> Now back in South Africa in 1941 and gaining a position with this survey group, Breuil's valuable contributions continued of recording Bushman paintings and discovering with van Riet Lowe stone tools from numerous sites.<sup>2</sup>

This doyen of prehistorians with a wealth of experience and papers on the prehistoric caves of Europe and China and the African continent, by his lifetime production of over 600 scientific papers, reveals the vast range of his field endeavours. His paper 'Les Subdivisions du Paléolithique supérieur et leur signification', 1912 (The Subdivisions of the Upper Palaeolithic and Their Meaning) established for the period a classification system which remains of enduring value.<sup>3</sup> By the time he left South Africa after the war finished in 1945 he was well acquainted there with Stone Age culture successions, the Australopithecine sites and fossils retrieved from them.<sup>4</sup> Cognizant of their importance, might Breuil now bring his influence to bear on overseas prehistorians to pay heed to these South African treasures? His actions affirm that he did so.

On his return in 1945 to his Paris post as Director of the Human Palaeontological Institute, he made there reacquaintance with his colleague

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- 1 Revil Mason, *Prehistory of The Transvaal*, University of the Witwatersrand Press, Johannesburg, 1969, p. 27.
  - 2 Mason, *Prehistory of the Transvaal*, p. 27; Dart, *The Abbé Breuil and the Osteodontokeratic Culture*, Diputación Provincial De Barcelona, Instituto De Prehistoria Y Arqueología; Monografías X1, Barcelona, 1964, pp. 347-8.
  - 3 *Encyclopaedia Britannica*, 15th edn. 1994, vol. 2, pp. 506-7.
  - 4 Dart with Craig, *Adventures with the Missing Link*, pp. 89-90.

and Jesuit priest anthropologist, Père Teilhard de Chardin, who, since his earlier Piltdown association had had extensive experience in the Orient, taking over in 1934 the excavations at Choukoutien (Zhoukoudian) after Davidson Black's untimely death, until Dr Franz Weidenreich arrived from Germany to carry on the task. At war's end the scientific world had been shocked by the disastrous news of the loss of the entire primitive human fossil collection from Choukoutien, near Peking (Beijing) in China—the most complete to date, totalling fourteen skulls, fourteen lower jaws and 148 teeth of the *Sinanthropus* (Peking Man) type. Over the years Franz Weidenreich had completed a series of meticulous monographs on those teeth, bones and skulls and, fortuitously, had prepared casts of the skulls. When the Japanese declared war on America in 1941 the joint efforts of the Chinese Geological Survey and the American Embassy in China swung into action to save this precious original collection by shipment of it to America. Such plans went lamentably awry. An American Marine Officer undertook to carry these specimens to America in his private luggage. However while the American forces awaited their troopship off the Chinese coast to take them home, the Japanese attacked—seized and interned these marines—their luggage vanishing. After the war, despite untold searches and enquiries, no trace was ever found of these original fossil specimens; their fate was pondered—were they lost at sea or, perhaps ground into medicine by the Chinese herbalists, a practice still popular today. This tragic loss would be softened only by the fact that earlier the casts made of them by Franz Weidenreich and his monographs had found their way safely with him to the American Museum.<sup>5</sup>

In 1946 the Abbé Breuil gathered Sir Julian Huxley, Père de Chardin for a meeting with Field Marshal Smuts (then in Europe for the Peace Conference) to discuss means by which interest in the significance of the South African Australopithecine fossils might be generated. Smuts' ready assistance was forthcoming. He would be leaving for America after the Peace Conference and would take a letter from de Chardin to reach, via Franz Weidenreich at the American Museum, one, Paul Fejos, Director of

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5 G. H. R. Von Koenigswald, *Meeting Prehistoric Man*, Thames & Hudson, London, 1956, pp. 48-55; Dart, *The Abbé Breuil and the Osteodontokeratic Culture*, p. 408, Dart with Craig, *Adventures with the Missing Link*, p. 49; Jia Lanpo, *Early Man in China*, Foreign Languages Press, Beijing, 1980, pp. 31-33. (Jan Lanpo was one of the earliest workers with Black, Chardin, Weidenreich and Pei Wenzhong at Peking and was later in charge of the excavations from 1935).



the Viking Foundation (later Wenner-Gren Foundation). On reading the trio's quest, Fejos would soon set in motion plans for promoting their cause.<sup>6</sup>

Dart heard Professor J. T. Wilson's death occurred on 2 September 1945 at Cambridge after a short illness at the age of eighty-four years. Only recently Dart had written to Wilson of his extensive work under preparation about his theory that a fourfold invasion from the European group at 2,000-year intervals had occurred in the Fertile Crescent of the Near East. Dart held hope that, when finished, Wilson would be prepared to vet it. Broom had also remained in constant touch by letter with Wilson. In a recent letter he mentioned they might be the last personal friends still alive of George Bernard Shaw, also reflecting that, 'It seems just like yesterday when I was in Sydney in 1895 and met you with Elliot Smith'.<sup>7</sup>

Tributes poured in world wide for James Thomas Wilson, many from Sydney where he served thirty-three years of his academic life before further service at Cambridge from 1920-1934 as Professor of Anatomy and from his retirement as Professor Emeritus. Professor J. P. Hill, a longtime colleague and friend wrote of 'the inspiration and encouragement he gave to many hundreds of students',<sup>8</sup> and that:

Many of them, both in Australia and England, have made great contributions to anatomical and medical science, or who have occupied important teaching posts, such as the late Sir Grafton Elliot Smith, and G. H. S. Lightoller, the late Norman Royle and F. P. Sandes, S. A. Smith, F. A. Maguire, Professors R. A. Dart, J. L. Shellshear, W. A. Fell, H. L. H. Green, F. Goldby and Una Fielding...Known affectionately if irreverently as "Jummy" to his students in Sydney he will be long remembered and respected by more than one generation of medical men in Australia.<sup>9</sup>

Echoing Raymond Dart's tribute of his mentor years earlier, Hill wrote of his personal indebtedness to Wilson:

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- 6 Dart, (ed.) *Beyond Antiquity: a series of radio lectures on the Origin of Man*, The South African Broadcasting Corporation, Johannesburg, 1963, p. 75; Dart with Craig, *Adventures with the Missing Link*, p. 49.
- 7 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 11, R. A. Dart letter to J. T. Wilson, 15 Oct. 1942; P.162, series 5, item 9, R. Broom letter to J. T. Wilson, 12 Mar. 1938.
- 8 Obituary, James Thomas Wilson, *The Medical Journal of Australia*, 29 Dec. 1945, p. 512, (Reprint), p. 11).
- 9 *ibid.*

His intense earnestness, his scientific integrity and outlook coupled with his tolerance and kindly counsel, had a profound influence on me during my student and later years. All of us who came in contact with him will treasure our memories and the privilege of having known a great man.<sup>10</sup>

Commenting on Wilson's strong influence on Dart, Phillip V. Tobias made note:

Often in life it happens that the mantle of an Elijah falls upon the willing shoulders of an appropriately equipped Elisha. It is interesting to reflect—in the light of Dart's own later ability to evoke the best out of his students—that his teacher, 'Jummy' Wilson, was also a prodigious 'maker of men'...How truly the mantle of Wilson fell upon Dart's shoulders.<sup>11</sup>

That Wilson remained an inspiration to Dart and that Dart acquainted Wilson of this is borne out in correspondence when he introduced some of his staff and students to meet Wilson when on their sabbatical leave in England. An example follows:

This will serve to introduce to you Dr Alexander Galloway who is my chief assistant here. He proposes to spend a portion of his sabbatical leave analysing African skeletal material overseas...I wanted him particularly to meet you, so that he might have some personal knowledge of the source of so much of our inspiration.<sup>12</sup>

Wilson it has been shown strongly supported Dart's discovery of 1924 in personal correspondence to him<sup>13</sup> and supported in *Nature*, the publication of Broom's discoveries from 1936. Although Wilson did not live to see the publication on 1 January 1946 of Broom's and Schepers' book, *The South African Fossil Ape-Men: the Australopithecinae*,<sup>14</sup> he would have read the continuous flow by Broom to *Nature* and other print outlets of his numerous other discoveries since 1936 and contained in the recently

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10 *ibid.*

11 Phillip V., Tobias, *Dart, Taung and the 'Missing Link'*, p. 4; P. V. Tobias & Reuben Plotkin, eds., *Dart Festschrift, the Leech*, vol. XXV111, nos. 3,4,5, Nov. 1958, article by Tobias, 'Raymond Arthur Dart: Biographical Sketch and Appreciation', p. 85. (F. Wheelhouse holds No. 62 of 100 leather-bound copies, signed and dated 9 Jan. 1959 by Raymond A. Dart, presented to her by Phillip Tobias in 1973).

12 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 8, R. A. Dart letter to J. T. Wilson re: Alexander Galloway, 25 Nov. 1937; P. 162, series 5, item 9, Dart letter to Wilson re: Joseph Gillman, 4 Oct. 1938.

13 *ibid.*, P 162, series 5, item 4. Dart letter to J. T. Wilson, 22 Apl. 1925, copy held by F. Wheelhouse.

14 R. Broom & G. W. H. Schepers, *The South African Fossil Ape-Men: the Australopithecinae*, Transvaal Museum, Memor No. 2 Pretoria, 1946, pp. 1-272.

published book. It covered his retrieval of parts of skulls of four adult Australopithecines, the lower end of a femur and some hand bones of *Plesianthropus* at Sterkfontein. From Kromdraai his recovery of the adult skull of *Paranthropus*, also an infantile lower jaw of the same type and part of an ankle bone (talus) and the lower end of a humerus and two toe bones. The Taung skull was covered and the associated faunal remains there and at the other two sites, with all specimens amply illustrated.<sup>15</sup> (fig. 85). By reading of these discoveries in *Nature* Wilson must have felt rewarded in that his trust in Dart's and Broom's work had not been misplaced.

Since his first discovery in 1936 of an adult *Australopithecus* at Sterkfontein, Robert Broom in the face of concentrated opposition in England to these South African fossil discoveries, remained stalwartly determined to keep both his and Dart's discoveries before the notice of scientists and the general public. In England on many occasions his articles outpaced Sir Arthur Keith's contributions in *Nature* and other newsprint. Keith would report on his unveiling on 23 July 1938 of a monolith memorial arranged by Sir Arthur Smith Woodward in the grounds of Barkham Manor, Piltown, Sussex, to mark the spot where the late Charles Dawson had found the fossil skull of 'early man' and honour him as its discoverer. Keith in his speech on that occasion remarked the Piltown skull was so different from any other human skull previously found, that the divergent opinions expressed by those who attempted to interpret it were not surprising. He told his gathering that he was even more impressed with the simian characters of the skull and brain-case, as well as those of the lower jaw, than he was when he had originally examined the fossil. His view was that the discovery, 'Goes on growing in magnitude and importance'.<sup>16</sup>

Keith as well would write on the Swanscombe and other English fossil skulls and the Palestine fossil skulls he researched when brought to him after discovery at Mount Carmel by the expedition leader Miss Dorothy Garrod.<sup>17</sup> Keith would praise and thank Raymond Dart for sending him a cast of the Florisbad Skull, discovered near Bloemfontein in South Africa in 1932 by Professor T. F. Dreyer. More than grateful to Dart, Keith had been

15 Dart, 'Robert Broom—His Life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug, 1951, p. 15.

16 A. Keith, 'The Piltown Man Discovery Unveiling of a Monolith Memorial', *Nature*, vol. 142, no. 3587, 30 July 1938, p. 196.

17 A. Keith, 'The Prehistoric People of Palestine', *Nature*, vol. 141, no. 3564, 19 Feb. 1938, pp. 340-42.

unable to obtain this specimen elsewhere. He would agree, 'It may be regarded as Dr Alexander Galloway has maintained, as a transition from the Rhodesian to the Boskop type, the latter heralding the modern races of South Africa - Bushman and Hottentot'.<sup>18</sup>

To keep South Africa to the fore Broom continued his dogged letters and articles on every specimen he was digging up in the Sterkfontein Valley. While reiterating the importance of Dart's 1924 fossil discovery from Taung as opening a new chapter in the history of the origin of man, Broom proclaimed:

No apology need be given for publishing to the world at the earliest possible moment all new evidence that is discovered which seems to throw light on the structure of the apes that are apparently related to the ancestors of man. Every month reveals some new facts of importance, and it seems to me better that these should be announced at once, than that they should be held back for perhaps years in the hope of publishing a detailed account.<sup>19</sup>

While the editor noted Broom continued to provide sensational news from the South African sites and that the latest accordingly surpassed in interest his earlier ones, he found difficulty when Broom described a recently found toe bone and interpreted its features as showing that *Paranthropus* must have walked erect, and accepting the series as forming part of the human evolutionary process. The editor informed, 'Though of course significant by analogy, on the grounds of its relatively late date, to which Sir Arthur Keith has directed attention, is reduced, though not eliminated by Dr Broom's evidence for a revised dating'.<sup>20</sup> Noticeably still evidenced are the strongly entrenched views of Sir Arthur Keith.

Others as well would call to notice their new discoveries. In the Far East, G. H. R. Von Koenigswald and Franz Weidenreich discovered in July 1938 a large skull fragment, and recently an additional *Pithecanthropus* specimen—almost a complete braincase from the Trinil formation, of Sangiran, Central Java.<sup>21</sup>

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18 A. Keith letter to the Editor, *Nature*, vol. 142, no. 3579, 30 July 1938, p. 1010.

19 R. Broom, 'Further Evidence on the Structure of the South African Pleistocene Anthropoids', *Nature*, vol. 142, no. 3603, 19 Nov. 1938, p. 897.

20 News and views of the Editor, *Nature*, vol. 142, no. 3603, 19 Nov. 1938, p. 508.

21 G. H. R. Von Koenigswald & Franz Weidenreich, Bandoeng, Java, letter to the editor, *Nature*, vol. 142, no. 3598, 15 Oct. 1938, p. 715.

When published on 1 January 1946, Broom's and Schepers' well-illustrated book on the South African Australopithecines, created an immediate scientific sensation. America responded magnanimously, defining it as the most important work published in biology in 1946, while the National Academy of Sciences in Washington awarded Broom the Daniel Giraud Medal.<sup>22</sup> For Broom, Dart and others of their colleagues there was no doubt where the Americans stood on the matter of the South African fossils, but what would be the British response, particularly from Sir Arthur Keith to whom Broom had made sure to despatch a copy of this book? His unexpected answer brought more shared joy for Dart and Broom, by his confessional letter to Broom:

I now agree with you that that piece of humerus, the lower end of the femur, the astragalus, metacarpal and os magnum are parts of the *Paranthropus* and *Plesianthropus*; that the teeth have all the characters of human teeth, that the hands were free and that the posture was bi-pedal; and yet I call even *Paranthropus* not a man but an anthropoid. Whatever theory one holds of human evolution, man as we know him must have passed through such a stage as is represented by the Australopets. I agree they may be direct descendants of such a stage.<sup>23</sup>...I hasten to congratulate you on a magnificent piece of work. You have placed the australs definitely on a map on man's past. Dart began the job but it is entirely to your sheer intuition, your energy and enterprise that has ended in such a harvest. Opposed to the differences of opinion I have acquiesced. Yours warmly, Nay, Affectionately, Arthur Keith.<sup>24</sup>

In a letter of a later date Keith confessed, 'No doubt the South African anthropoids are much more human than I had originally supposed'.<sup>25</sup> While this correspondence was heartening for Broom and Dart, might Keith ever go public on this issue? Would his remarks, yet unqualified by press publicity, be enough to loosen the stanglehold of thought in favour of the orient for human origins? Change perhaps the majority view of scientists as Broom pointed out, who thought *Australopithecus* 'was a higher anthropoid, with some human characters probably developed by parallelism, but that it

22 Dart with Craig, *Adventures with the Missing Link*, p. 80.

23 Broom, *Finding the Missing Link*, Watts & Co., London 2nd edn., 1951, p. 60, (Broom's book has some typing errors and varies slightly to that quoted by Dart with Craig); Dart with Craig, *Adventures with the Missing Link*, p. 80, both quoting from A. Keith's letter to Broom of 12 Mar. 1946; A Keith, *An Autobiography*, Watts & Co., London, 1950, p. 691.

24 *Skull Wars (video documentary) Searching for Lost Worlds*, Toronto, Canada, Jan. 1996, reproducing part of Keith's letter to Broom, 12 Mar. 1946.

25 Dart with Craig, *Adventures with the Missing Link*, p. 80.

threw very little new light on man's origins'.<sup>26</sup> Broom was aware of a drift in thought since his discovery of the allied Sterkfontein and Kromdraai types and scraps of limb bones that were essentially human. He believed, 'many had begun to consider perhaps Dart and I had been right after all'.<sup>27</sup>

Meanwhile, as elsewhere, with the war over, staff and students were filtering back from the forces to the University of the Witwatersrand. One, Trevor-Jones would return from five years' war service to do his MSc, then complete his medical degree, after which he would move to Salisbury (Harare) in Southern Rhodesia (Zimbabwe) to begin his twenty-year practice there as an orthopaedic surgeon. While there he became a Trustee of the Museum. He would then spend six years in Cape Town as Senior Lecturer in Anatomy at the University of Cape Town, then twelve years as Professor of Anatomy at the Dental School at the University of the Witwatersrand.. On mandatory retirement at aged 68 years he returned to surgery at Tembisa Hospital for ten years retiring from there aged 78 years. Over the years his association with Raymond Dart would, nevertheless be maintained in helping unfold aspects of early man's course in Africa, while his in-depth studies of baboons remained a life time commitment.<sup>28</sup>

Now that Bernard Price had made finance available for collecting the precious Karroo fossils there was established the Bernard Price Foundation for Palaeontology (later the Bernard Price Institute for Palaeontological Research). The small initial committee comprised, Professors, T.W. Gevers (Geology), C van der Horst (Zoology), C. van Riet Lowe (Archaeology), R. A. Dart (Anatomy), also the University Principal, Mr H. R. Raikes, Dr Bernard Price and Dr Robert Broom from the Transvaal Museum. Dr S. H. Haughton (who earlier had described the Taung baboons), Director of the Geological Survey of South Africa, would join later.<sup>29</sup>

With the urgent need for appointment of a field collector of the Karroo fossils, Broom's suggestion of James Kitching as the ideal person was accepted. Broom knew him well, for James had helped his father as did his two brothers, Ben and Scheepers, collect specimens for him years earlier in the Karroo. James Kitching, still in the Army at Lake Como in Italy would

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26 R. Broom, *Finding the Missing Link*, p. 59.

27 *ibid.*

28 Trevor Jones interview in Johannesburg by F. Wheelhouse, 2 April. 1973; Trevor Jones letter to F. Wheelhouse, from Irene. South Africa of 27 July 1993.

29 A. S. Brink, (unpublished notes) n.d. , p. 1.

find his demobilisation accelerated, influenced by the already demobilised Major van Riet Lowe. After collecting Karroo fossils James would later work in the Makapansgat Valley.<sup>30</sup>

Profound interest in reading the Broom-Schepers' book on the South African Australopithecines by Oxford anatomist, Professor Wilfrid Edward Le Gros Clark, FRS (later knighted), determined he would be the advance guard from England in December 1946 to visit and examine these much maligned Australopithecine creatures in a personal endeavour to correlate their primate phylogenic position. His respected background shows he was well equipped to do so.

Elliot Smith had suggested he apply for the position at Oxford, while, for him, James T. Wilson contributed a glowing testimonial of his capabilities. Wilson outlined the candidate's experience and research, pointed to his ability as an able and inspiring teacher, advised he was a skilled investigator, who as well possessed, 'the gift of lucid public exposition characterised by clearness of perception and by deliberate and cultured utterance'.<sup>31</sup> Wilson further elaborated that in the domain of morphology, human and comparative, Le Gros Clark had become one of the leading authorities in cerebral morphology and in experimental investigation in neurological studies. Additionally Wilson pronounced: 'I regard Professor Le Gros Clark as occupying a secure position for years in the front rank of British Anatomists, though still under forty years of age'.<sup>32</sup>

Hosted by Marjorie and Raymond Dart in their Johannesburg home,<sup>33</sup> Le Gros Clark was given free access to all the Taung material held by Dart and also Broom's specimens at the Transvaal Museum in Pretoria, and taken to the sites of their extraction. Le Gros Clark's lengthy critique which appeared some time later in the October 1947 issue of the *Journal of Anatomy*,<sup>34</sup> while proving highly rewarding for Dart and Broom, tore at the

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30 *ibid.* pp. 1-2.

31 University of Sydney Archives, The J. T. Wilson Family Archives, P 162, series 5, item 6, J. T. Wilson letter to Oxford University, 3 Nov. 1933.

32 *ibid.*

33 Diana Dart Graham, recorded tape from Sarasota, Florida, USA to F. Wheelhouse of 11 Nov. 1993, advising Le Gros Clark brought presents from England for the Dart's children, little Diana delighting in her shining many-coloured plastic tea set (unprocurable then in South Africa), also a box of watercolour paints.

34 Wilfrid Le Gros Clark, 'Observations on the anatomy of the Fossil Australopithecinae', *J. Anat.*, vol. 81, Oct. 1947, pp. 300-33.

very foundations of British held scientific beliefs. His stunning and positive revelations must have shocked, when he concluded in part:

The resemblances which they show to man in the morphological features of the skull, dentition and limb bones are so remarkable that their zoological relation to the Hominidae can hardly be doubted. The fossils show first that in human phylogenesis the evolution of the limb structure proceeded at a more rapid rate than that of the brain...secondly, that while in their cerebral development, and therefore in the general proportions of the skull, they represent a level of evolution corresponding to that of the large anthropoid apes, they show no structural evidence of close relationship with the latter.

On the contrary, the advanced characters which are already very evident in their skull, dentition and limb bones indicate their position in the phylogenetic radiation of the Hominidae (human beings) rather than the Pongidae (apes).<sup>35</sup>

Philanthropist Dr Bernard Price after his visit with Raymond Dart and others to the Makapansgat Valley, became fired with enthusiasm by Dart as to the possibilities of prehuman fossils there, and from where in 1945 student Phillip Tobias had brought back to Dart the telltale fossil baboon skull. Dr Price would also supply funds for Dart to investigate in this valley at the Limeworks and for van Riet Lowe to search for more Stone Age tools in the Cave of Hearths further up the valley. Occupying an isolated corner of the Northern Transvaal some 320 kilometres north of Johannesburg and nineteen kilometres east-northeast of Potgietersrus, the Makapansgat Valley features dolomite cliffs punctured by numerous large caves. One of these caverns, the Historic Cave had been declared an Historic Monument in 1936, its gruesome record of last century being revealed in 1892 by W. L. Distant in his book, *A Naturalist in the Transvaal*.<sup>36</sup> In short, Native Chiefs Makapan and Mapela had enjoyed possession of their land in this valley and beyond until 1835 when white voortrekkers began their occupation of it. It is said that over time the highhanded behaviour of some Boer settlers provoked retaliation by the natives and slaughter by them at Moorddrift (Murder Ford) of many Boer men, women and children, among them Hermanus Potgieter and his party. Reprisals followed. Two Boer mounted commando groups in vengeful return and led by M. W. Pretorius and Piet

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35 Dart with Craig, *Adventures with the Missing Link*, pp. 114-15, quoting W. Le Gros Clark's paper, 'Observations on the Anatomy of the Fossil Australopithecinae', *J. Anat.* vol. 81, Oct. 1947, pp. 300-33.

36 Dart with Craig, *Adventures with the Missink Link*, pp. 85- 89.



Potgieter, pursued Makapan and his tribe to this valley, where in a huge cave (609 metres x 152-213 metres) high above the valley floor, they found refuge. When located on 25 October 1854, the commandos attacked with guns and over time led several raiding parties, some by Paul Kruger—later Transvaal's most famous President. They even tried to smoke-out these cave dwellers, but to no avail. The siege of twenty-five days took toll on the entombed—most perished with their chief through lack of food and water. It is held that over decades these victims' bones were sought by witch doctors for use as muti (medicine) while some industrialists are said to have used these bones in the processing of sugar in Durban. Farmers as well used the bones for bone meal. Named the Historic Cave, two other prehistoric caves below its eastern end, the Cave of Hearths and the Rainbow Cave, together with the more ancient Limestone Caves a mile further down the valley, now the object of investigation, would soon unfold their panorama of human and animal habitation reaching back millions of years.<sup>37</sup>

From 1 January 1947 the first Pan-African Congress in Prehistory organised by Louis Leakey was held in Nairobi in Kenya and for which Field Marshal Smuts, now returned from overseas, arranged provision of a plane to convey to it South African and other delegates. Still working on the Australopithecines, Le Gros Clark was invited to accompany the contingent of scientists representing South Africa's interests. While there he was invited to deliver the public address on human evolution. The South African delegates were: Alex du Toit, S. H. Haughton, H. B. S. Cooke, L. C. King for Geology; R. Broom, M. R. Drennan, A. Galloway, L. H. Wells and R. A. Dart for Physical Anthropology, while the Abbé Breuil, C van Riet Lowe, B. D. Malan and A. J. H. Goodwin were ambassadors for South African Archaeology.<sup>38</sup>

Following this successful conference, work got underway in April 1947 in the Makapansgat Valley, the Cave of Hearths programme directed by van Riet Lowe with Captain Guy A. Gardner (of Mapungubwe and Bambandyanalo fame) and the three Kitching brothers, James, Ben and

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37 Judy Roets (later Doctor Maguire) and Brian Maguire, interview by F. Wheelhouse in the Makapansgat Valley, 25 Mar. 1973; Dart with Craig, *Adventures with the Missing Link*, pp. 84-90.

38 Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 296; Dart, 'Africa's Place in the Evolution of Man', Reprint from the *Annual Proceedings 1959-1960, Associated Scientific and Technical Societies of South Africa*, p. 23.

Scheepers. On the valley floor hundreds of metres below the Cave of Hearths the brothers helped to build two research huts, using local stone and lime morticing; one for research work, the other for stores. In September 1947 the Cave of Hearths yielded Ben Kitching the prize of a jaw fragment—that of a child of the Rhodesoid type, dated then at 50 000 years old. P.V.Tobias later made a more detailed study of this mandible. Others would identify there the earliest use of fire by Africans and stone tools transitional between Acheulean and Fauresmith type (the earlier term used for Later Acheul).<sup>39</sup>

In September 1947 James Kitching began his fossicking of Dart's Limeworks dumps. Raymond Dart happily explained, 'In September came the first corroboration of my dream that Makapansgat would prove to be an australopithecine site when James Kitching found an occiput (hinder part of the skull) of one of these creatures'.<sup>40</sup> At that time, thinking it differed from those of Sterkfontein and Kromdraai, and despite Broom's urging that he create a new genus, he named it *Australopithecus prometheus*. Subsequently J. T. Robinson would define it to be *Australopithecus africanus*. Imagine Dart's delight now to be back on the trail of his Taung child's relatives. In that year of 1947 perhaps for Dart no other event could cap this one, but one must have—a letter of apology in *Nature* over the signature of Sir Arthur Keith, magnanimously entitled "Australopithecinae or Dartians". It read:

When Professor Dart of the University of the Witwatersrand, Johannesburg, announced in *Nature* the discovery of a juvenile *Australopithecus* and claimed for it a human kinship, I was one of those who took the point of view that when the adult form was discovered it would prove to be nearer akin to the living African anthropoids—the gorilla and chimpanzee. Like Professor Le Gros Clark I am now convinced on the evidence submitted by Dr. Robert Broom that Professor Dart was right and I was wrong. The Australopithecinae are in or near the line which culminated in the human form. My complaint now is the length of the name which the extinct anthropoid of South Africa must forever bear. Seeing that Professor Dart not only discovered them but so rightly perceived their true nature, I have ventured, when writing of the Australopithecinae, to call them by the colloquial name of Dartians, thereby saving much expenditure of ink and of print. The Dartians are ground-living anthropoids, human in posture, gait and dentition, but still anthropoid in facial physiognomy and size of brain. It is

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- 39 Revil Mason, *Prehistory of the Transvaal*, Witwatersrand University Press, Johannesburg, 1962, pp. 28, 164; Dart, 'The First Human Mandible from the Cave of Hearths, Makapansgat', Reprint from *The South African Archaeological Bulletin*, Cape Town, vol. 3, no. 12, pp. 1-4.
- 40 Dart with Craig, *Adventures with the Missing Link*, p. 100.

much easier to say there was a “Dartian” phase in man’s evolution than to speak of one which was “Australopithecine.”<sup>41</sup>

Such an apology must have overjoyed Dart even though coming as late as twenty-two years after his discovery and continual rejection of it by the British establishment. From when he was a young professor, Dart had never wavered from by his correct reading into those ancient eye sockets and brain endocast, as the shadowy imprint of humanity.

In 1947 Robert Broom was back at Kromdraai and Sterkfontein continuing his defiant blasting through the fossil breccia, earning bans to work there from the Historical Monuments Commission. His continued work in these areas was made possible only by the guiding hand of his great friend Field Marshal Smuts. The press made merry covering the scraps of this ageing palaeontologist with bureaucracy, while the public lost none of its endearment of him and his wonderful discoveries.

Through his magic midas touch Broom’s bounty multiplied. Aided by his excellent young assistant John T. Robinson, quarry-man van der Nest and his chief native assistant Daniel, whose ability in zoology he praised, Broom began work at Sterkfontein on 1 April 1947. Within a few days he gained, ‘the crushed snout of an adolescent *Plesianthropus* with six beautiful teeth, quite unworn’.<sup>42</sup> A little later, ‘the snout of a young baby skull with a few fine upper milk-molars; and an isolated molar’.<sup>43</sup> This he thought was probably that of an adult female. On 18 April, only a yard beneath where he had extracted there in 1936 the type skull, Broom related the thrill from his next gelignite blast:

When the smoke of the blast blew away, we found that a beautiful skull had broken in two. The outer part of the rock had the top of the skull, and all the lower half was exposed in the wall. As the top of the skull had been split off we could see into the brain-cavity, which was lined with small lime crystals. I have seen many interesting sights in my long life, but this was the most thrilling in my experience.<sup>44</sup>

*Broom knew the importance of photographing this splendid specimen in situ—alas he had no camera. Ever resourceful, Broom quickly overcame*

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41 A. Keith, ‘Australopithecinae or Dartians’, *Nature*, vol. 159, 1947, p. 377; Dart with Craig, *Adventures with the Missing Link*, pp. 80-81, quoting Keith’s letter in *Nature*.

42 R. Broom, *Finding the Missing Link*, pp. 64-66.

43 *ibid.*, p. 64.

44 *ibid.*, pp. 65-66.

his dilemma. He and his helpers drove to the nearest farm of Mr van Pittius, also the nearest telephone three kilometres away, where he rang the editor of the *Star* newspaper to send out immediately a photographer and reporter to capture his amazing discovery. Within an hour and a half they arrived. Once photographed, Broom and his helpers carried down the hill the heavy block of stone containing the top of the skull. Then with crow-bars the larger block bearing the base of this skull was extracted, with all hands also conveying it to the car, then to the Transvaal Museum in Pretoria. Broom described this haul as 'the most valuable specimen ever discovered'.<sup>45</sup> This practically complete skull, though without the lower jaw became locally and affectionately known as 'Mrs Ples', (figs.85-88) (named by Broom after his first Sterkfontein specimen, *Plesianthropus transvaalensis* - later sunk into *Australopithecus africanus*). Accounts of it on 17 May 1947, with photos in *Nature* and *The Illustrated London News*, created a sensation in Europe and America.<sup>46</sup>

Broom's bounty further increased when on 24 June 1947 he retrieved a complete lower jaw of a male, *Plesianthropus*, together with some other bones. On 1 August came his third great discovery, the two sides of the pelvis of *Plesianthropus* with most of a femur (thigh bone) and a few vertebrae—a vital discovery—proof now that the creature did walk upright and further verification of Dart's assessment of this fact some twenty-three years previously. Later that year he gathered three more skulls, one of which was nearly complete, another crushed, while the third had, 'half a face and a beautiful palate with many fine teeth'. Next he found a child's lower jaw with perfect milk teeth and the same age as the Taung child, as well as two more imperfect skulls.<sup>47</sup>

As usual Broom religiously continued his stream of information of these discoveries to *Nature*, *The Illustrated London News*, and American journals. This latest subject material was recorded in South Africa in another expanded monograph.<sup>48</sup> In this the authors would now claim:

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45 *ibid.*, pp. 65-66.

46 *ibid.*, pp. 64-66.

47 *ibid.*, pp. 70-72.

48 R. Broom, J. T. Robinson & G. W. H. Schepers, *Sterkfontein Ape-Man: Plesianthropus, Transvaal Museum Memoir no. 4*, Pretoria, 1950; Dart with Craig, *Adventures with the Missing Link*, p82.

We in South Africa have collections which rival those of Choukoutien. We have about 200 teeth of our Australopithecines, five good skulls and eight imperfect ones, and we have more important remains of the skeletons than have so far been found in China.<sup>49</sup>

During 1948 both Sterkfontein and Makapansgat Valleys continued yielding relatives of the Taung child. On 27 July 1948, Alun R. Hughes, Dart's laboratory assistant, while working through the Limeworks breccia dumps aided by James, Ben and Scheepers Kitching, some women students and some natives, found a piece of breccia containing a U-shaped bone. It proved of immense value as the jaw of a twelve year old *Australopithecus prometheus* in which the second permanent molars on the left side had erupted before the premolars, yet with only half of these erupted on the right side. Four front incisor teeth were missing from its badly fractured jaw. To Dart the damaged mandible presented evidence of a severe blow at short range, a controversial matter with which he would become strongly engaged in the near future and over a long time. For Dart this jaw provided valuable information about the symphyseal region while the valuable unworn teeth added much to 'the understanding of the growth transformation as well as the range of variation in the South African man-apes'.<sup>50</sup> The Limeworks dumps shortly yielded more specimens to Alun Hughes who three months later found the right side of a female adult face and in November a further four pieces of it were found. Ben Kitching gained the upper jaw of an older specimen, and also a portion of the skullcap of a young individual. Above all, importantly were retrieved two pieces of the pelvis, a left ilium (hip blade) and a right ischium (sitting bone) from perhaps a twelve years old boy. This adolescent hipbone from Makapansgat found a year after Broom's specimens at Sterkfontein of a nearly complete pelvis with attached skeletal parts and resembling that of an adolescent Bushman hipbone, (as did also the one from Makapansgat), became irrefutable evidence for any lingering doubters of the upright gait of these creatures across the South African veld.<sup>51</sup>

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49 Dart with Craig, *Adventures with the Missing Link*, p. 82, quoting from R. Broom, J. T. Robinson & G. W. H. Schepers, *Sterkfontein Ape-Man: Plesianthropus, Transvaal Museum Memoir no. 4*, Pretoria, 1950.

50 Dart, 'An Adolescent Promethean Australopithecine Mandible from Makapansgat', *S. Af. J. Sci.*, vol. 2, no. 3, Oct. 1948, pp. 73-75.

51 Dart with Craig, *Adventures with the Missing Link*, pp. 100-103.

Meanwhile in 1948 Broom, while excavating at Swartkrans aided by funds from the University of California Expedition, located a large new type of lower jaw of an ape-man which he named *Paranthropus crassidens*. Its teeth were essentially human though larger than any known type. Some isolated upper molars and front teeth were also recovered. Later a palate with part of the face of a female were located also the bones and some skulls of carnivores, antelopes, dassies and baboons—strangely quite unlike those from Sterkfontein or Kromdraai. In April 1948 while Broom was overseas, his assistant John T. Robinson unearthed a huge jaw, one which proved the largest so far found from any country.<sup>52</sup>

In the interim the call by the Abbé Breuil, Sir Julian Huxley, Père de Chardin and Field Marshal Smuts to Paul Fejos at the Wenner-Gren Foundation in America for the promotion of the South African Australopithecines had been acted upon by way of Le Gros Clark's invitation to New York to participate in the Third Summer Seminar of the Foundation to report on the 'new South African finds of *Australopithecus* and also the Miocene<sup>53</sup> [ape] finds in East Africa'. With those further discoveries of Australopithecines in 1948 at Makapansgat, also the year of Mary Leakey's discovery of jaw and skull fragments of an 18 million-year-old ape (*Proconsul africanus*) on Rusinga Island, Lake Victoria bordering Kenya,<sup>54</sup> Dr S. L. Washburn was provided with funds by the Foundation for field work in East and South Africa. As a result of Washburn's report Raymond Dart and Alexander Galloway (since 1946 Head of the Department of Anatomy and Dean of the Faculty of Medicine in Makerere Medical School at Kampala in Uganda),<sup>55</sup> were invited in 1949 to New York to the Summer Seminar of the Viking Fund. Dart would enjoy this sojourn with his early staff member from 1932, whose important work on the Mapungubwe and Bambandyanalo skeletons is discussed above (Chapter 8) and now more recently returned from war service as a decorated Major in the South African Army Medical Corps.

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52 Broom, *Finding the Missing Link*, p. 75.

53 Dart with Craig, *Adventures with the Missing Link*, p. 115.

54 'First Lady of Fossils: Mary Nicol Leakey: 1913-1996', *Time*, 23 Dec. 1996, p. 69; *AnthroQuest*, The Newsletter of the L.S.B. Leakey Foundation, no. 3, Spring 1997, p. 1.

55 Dart, Foreword, p. xv in Alexander Galloway's, *The Skeletal Remains of Bambandyanalo*, (ed.) Phillip V. Tobias, Witwatersrand University Press, Johannesburg, 1959.

With the assistance of talented members of his department Dart arranged immaculate preparation of material to take with him. From the back and front ends of the female adult skull and the adolescent lower jaw which almost fitted the female jaw, were prepared semi and full bust reconstructions of the Makapansgat *Australopithecus* female. He would take his bust of the Taung infant he had prepared nearly twenty-five years previously for the Wembley Exhibition. As well he included an adolescent Bushman pelvis with replicas of the Makapansgat pelvic fragments fitted to it. An adolescent chimpanzee pelvis was taken for comparison. Above all he took his most prized Taung child, also the original Makapansgat fossils, supported with casts and reconstructions of those Australopithecine specimens from all the other South African sites found by Broom and his helpers. Their presence proved both penetrating and stimulating to those international scientists present.<sup>56</sup> (figs 89, 90).

During 1948 and 1949 Robert Broom undertook an exhausting extensive lecture tour of Europe and America. On his return in July 1949 Broom gathered three fairly complete skulls of *Plesianthropus*. At Swartkrans with J. T. Robinson in 1949-1950 many more discoveries were made and it was decided a separate monograph was needed on them because of their range, particularly on that large jaw which Broom classified as from *Paranthropus crassidens*, and when a child's skull was cleaned out and found to have a cranial capacity of 750 cc. For the adult male Broom estimated a possible capacity of 1,000 cc,<sup>57</sup> thus throwing down the gauntlet for scientists to deny the right of the Australopithecines to be regarded with human beings rather than with apes. He classified this latter specimen as *Telanthropus capensis* and regarded it as one of the oldest known men.<sup>58</sup>

From the time of Broom's first monograph with Schepers on the Australopithecines, more honours had flowed his way. At age eighty he received an honorary DSc from the University of Stellenbosch where years ago he had been Professor of Zoology and Geology. In 1947 from the Royal Society of South Africa and the Royal Society of Edinburgh he received their coveted Honorary Life Fellowship. The Broom Commemorative Volume of

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56 Dart with Craig, *Adventures with the Missing Link*, pp. 115-17; Dart, 'Thirty Years (1924-1954) of Companionship in South African Prehistory', *S. Afr. J. Sci.*, vol. 51, no. 10, May 1955, p. 296.

57 R. Broom, *Finding the Missing Link*, pp. 76-79.

58 *ibid.*, 75-77.

the Royal Society of South Africa was publicly presented to him on 14 May 1948. The Royal Academy of Sciences of Sweden elected him a Foreign Member and his old *Alma Mater*, the University of Glasgow, awarded him the Honorary LLD. While on his extensive lecture tour of America this great crusader of the Australopithecines was awarded the Elliot Medal of the National Academy of Sciences in Washington, and while he was in England he received the Wollaston Medal of the Geological Society of London. On this widesweeping trip Broom would also visit Von Koenigswald at Utrecht in Holland and see at first hand the specimens of *Pithecanthropus* and *Meganthropus* from Java. By the time Broom returned in July 1949 from this exhaustively demanding trip he was ill and suffered 'a serious respiratory and cardiac attack'.<sup>59</sup> With his health so impaired he was only infrequently able to get to the Museum to work. He was, however, able on 31 October 1949 to address a gathering on the occasion when Field Marshal Smuts unveiled the splendid bronze bust of him by Elsa Dziomba and presented by the Union Government to the Transvaal Museum to stand in its Entrance Hall. (fig.91). He would never regain his usual abundant, astonishing vitality. He died early on the evening of 6 April 1951.<sup>60</sup>

It was Broom who had alerted Dr Price to the need to collect and preserve South African fossils and from which flowed a research institute for this purpose. To Dart:

Broom's enthusiasm was boundless and infectious; he communicated to all his audiences, and especially to student audiences, something of that roseate aura of romance and adventure with which hunting, and collecting, and drawing, and writing about natural objects had always been suffused for himself.<sup>61</sup>

Broom's assistance to students was legendary and at times unusual in its course. Author Roy Terry illustrates a case in point, of one student who would never forget when he appeared before the committee of Dart, Broom, Galloway and Wells for an oral examination. Terry mentions, 'In his easy Scots manner, Broom put his hands round the student's shoulders and enquired: "Well, my boy, what would you like to talk about?" "The T... T... Taungs ss...s...skull," the student stammered. "Ah yes, the Taungs skull", said Broom reflectively, "and immediately launched into an argument with

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59 Dart, 'Robert Broom—His Life and Work', *S. Afr. J. Sci.*, vol. 48, no. 1, Aug, 1951, pp 16-17.

60 *ibid.*, p. 17.

61 *ibid.*, p. 17.



Dart, Galloway and Wells.” Terry related how the student stood there enthralled listening to the erudite discussion which took place, and that seventy-five minutes later Galloway looked at his watch to find it was lunchtime. As Terry pointed out, ‘Broom walked across to the student and, in dismissing him said’, “You’ve done very well, my boy. It was most interesting.” The amazed student was to realise that in only saying three words, he had passed this examination.<sup>62</sup>

Broom, of whom Smuts once wrote, predicted:

Any moment now we may be in sight of spectacular discoveries. The quarry is being run to earth; the scent has been found; and the kill may come any moment. What a thrill! And what a thrill it will be for this old Nestor of Science, himself almost as old as the ante-diluvian world in which he has worked with such spectacular fortune and success.<sup>63</sup>

As Dart reflected:

Broom made no attempt to hide his pride in his own achievements; but throughout his life he assisted others with specimens he had himself collected; his admiration of what other great figures had achieved was unstinted; he readily communicated his knowledge of hunting grounds to others; he happily collaborated with scientists, especially juniors, in the writing of their papers; he openly and gladly expressed his views about any subject or specimen to which he had given study; and he was a source of inspiration and comfort to his friends. As one has put in writing to me: ‘He had the gift of helping me to have faith in myself’.<sup>64</sup>

Broom’s was a lifetime of output of several books, more than 400 scientific papers and the naming of countless new orders, families, genera and species, so enriching zoological science. Dr Broom would be further honoured by colleagues worldwide on the occasion of the centenary of his birth, 30 November 1866 by Memorial Lectures in the Great Hall of the University of the Witwatersrand on 19 October 1966. As well on 1 December 1966, the Robert Broom Museum was opened at the Sterkfontein Cave site by his son, Mr Norman Broom in the presence of scores of his scientific colleagues and friends. They saw the unveiling of a second Elsa

62 Roy Terry, *Raymond A. Dart: Taung 1924-1974*, Museum of Man and Science, Johannesburg, 14 Aug. 1974, pp. 17-18.

63 Dart, ‘Robert Broom—His Life and Work’, *S. Afr. J. Sci.*, vol. 48, no. 1, Aug. 1951, p. 17, quoting Smuts’1948 words.

64 *ibid.*, pp. 17-18.

Dziomba bust of him holding the skull of his famous 'Mrs Ples' near the spot where he found his immortal treasure.<sup>65</sup> (fig.92).

Phillip Tobias had no doubts of Broom's support of Dart, mentioning, 'Broom was Dart's bulldog, he was his great supporter, and it was Broom's destiny ultimately to find the first adult of the same kind of creature as the Taung child'.<sup>66</sup>

Above all Raymond Dart would ever remember and revere Robert Broom. On the occasion of Broom's and Schepers' first Memoir of 1946 he wrote:

Thus the tireless efforts and the staggering successes of my earliest and staunchest supporter, Robert Broom, had vindicated to the satisfaction of even the most eminent anthropologists most of the claims made more than twenty years previously.<sup>67</sup>

Field Marshal Smuts had died in 1950, but his prefatory words of praise for Broom written for the 'Robert Broom Commemorative Volume' of the Royal Society of South Africa in 1948 to celebrate Broom's eightieth anniversary, would gain enduring resonance:

Every South African scientist feels prouder because of Robert Broom. Every South African feels bigger because of him.<sup>68</sup>

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65 Phillip V. Tobias, 'The Centenary of the Birth of the Late dr Robert Broom, F.R.S.', 30 Nov. 1966, *S. Afr. J. Sci.*, vol. 63, no. 9, Sept. 1967, pp. 354-56.

66 Phillip V. Tobias, as recorded in *Skull Wars* (video documentary), Fabulous Discoveries Inc., Toronto, Canada, Jan. 1996.

67 Dart with Craig, *Adventures with the Missing Link*, p. 82.

68 Dart, preface to G. H. Findlay's book, *Robert Broom F.R.S.*, Balkema, Cape Town, 1972, p. iv.

## CHAPTER 12

### AN ENIGMA UNMASKED : MULTIPLE CHALLENGES

In 1949 Dart exhibited and discussed his original Taung skull and later Australopithecine discoveries from Makapansgat in New York (courtesy of the Viking Fund) and gave lectures in Boston for the Lowell Institute.<sup>1</sup> He became a happier man than ever before with confirmation by his colleagues of his prestige and status as a scientist by their general acceptance of his proto-humans of erect posture and body carriage. Ten years earlier Dr King Gregory, who now hosted him at his Woodstock, New York, residence, had confirmed with Dr Milo Hellman, the human dentition of the Australopithecines. (figs. 93, 94). Their zoological position was discussed at this New York conference, some thinking that man, man-apes and apes represented three parallel lines of evolution, with man-apes closer to man than to apes. Some nevertheless thought *Australopithecus* merely an offshoot. Further support came from Dr George Barbour, a geomorphologist of Cincinnati University and Dr Charles Camp, a palaeontologist from the University of California, both recent visitors to the South African sites and witnessing there the fossil material. Nevertheless brain size still remained a dilemma for many, clinging as anthropologists did to the tenet of the large brain as an essential for early human ancestry—on which Dart commented, this 'was a doctrine whose general acceptance was due principally to the teachings of my old chief, Sir Grafton Elliot Smith...The brain of Piltdown had been accepted as corroborating his beliefs'.<sup>2</sup>

Even as Dart toured America, winds of change began to stir in England over the Piltdown material. Dr Kenneth Oakley of the British Museum and C. R. Hoskins were attempting a new type of testing by fluorine of ancient bones in an endeavour to estimate more accurately their age, repercussions of which within a few years would dramatically change ingrained views held on Piltdown. What implications might this hold for Dart's Taung skull? This matter Dart pondered as he and Marjorie winged their way across the Pacific Ocean arriving from Auckland, New Zealand by Tasman Flying Boat in Sydney on 30 December 1949, to fulfil engagements there.

1 *Sydney Morning Herald*, 31 Dec. 1949.

2 Dart with Craig, *Adventures with the Missing Link*, p. 119

Now back in the land of his birth after an absence of thirty-two years, Dart was honoured to deliver The Inaugural John Irvine Hunter Memorial Oration at his old *Alma Mater*, the University of Sydney, and in so doing recapitulate with pride to the audience his now accepted 1924 Taung Skull discovery and its evolutionary value. While there he would renew many old friendships. He became reacquainted with Dr Claude Witherington Stump, last faced in 1922 when Stump had vied with him for the Johannesburg appointment. Stump had gained appointment to the University of Bangkok soon after, but by 1926 had moved to a position with the Medical School of the University of Sydney.<sup>3</sup> (fig. 38). Most pleasurable for Dart was his renewed meeting with his lifelong friend Joe Shellshear, (fig. 95), whose personal company he had not shared since 1921, through Joe's appointment to the Hong Kong University. What a time for memories and discussions, particularly with Shellshear and importantly on his ideas of Piltdown Man. Joe Shellshear, Research Professor of Anatomy at the University of Sydney from 1937-1948, had earlier sent Arthur Keith a cast of a brain which he considered Piltdown Man might possess. Even with the several discoveries from 1936 of Australopithecines in South Africa, Keith's strong interest in Piltdown Man had not diminished and is evidenced in his reply to Shellshear of 2 June 1939, which read in part: 'Your endocran. [endocranium] of Piltdown came this morning. We are pretty nearly in agreement. I shall fit the bones on sometime and see how the man looked with your brain inside his skull'.<sup>4</sup>

Now in 1950 Shellshear discussed his changed views of Piltdown with Dart during his visit, demonstrating his own reconstruction of it while pointing out the obvious fallacies of previous reconstructions. Of this incident Professor N. W. G. Macintosh (later from 1955 Head of Anatomy at the University of Sydney), reminded Dart: 'I remember too your attempt to persuade him to write this up, even if briefly. You too may remember his definite refusal to do so, saying, "No there has been too much emotion spilt on this subject, it affected Grafton himself and I'm not going to stir it all up again".<sup>5</sup>

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3 Ann Jervie Sefton *et al*, *The Centenary Book of the University of Sydney Medical School*, The University of Sydney Press, 1984, pp.312-315.

4 Shellshear Museum Archives, Medical School, University of Sydney, Arthur Keith, letter to J. L. Shellshear, 2 June 1939. This Museum houses a large collection of Piltdown casts and related material.

5 *ibid.*, N. W. G. Macintosh, letter to R. A. Dart, 12 June 1959.

Had Shellshear acted then, as will be seen, it would have brought the course of history forward on the Piltdown enigma.

While in Sydney Dart would rejoice in meeting his brother, the Reverend Dr Harold W. Dart and his family, (fig.96) then travel to Queensland to be reunited once more with his mother, now eighty-four years old and some of his other brothers. He would not forget to visit his old schools, Blenheim State Public School and Ipswich Grammar School, and with his brother Dr John Leslie Dart, mindful of the value of their formative years at Ipswich, donate funds in perpetuity for an annual prize; this to be awarded to 'the senior student most likely to be stimulated by the award to make further progress mentally, physically and in personality. The Dart Prize, recorded on the Honours Board in the Great Hall, was first awarded in 1951.<sup>6</sup>

Returning to South Africa via India and the Seychelles, Dart found Makapansgat Valley experiencing winds of change. The death of Dr Bernard Price caused cessation of research funds flow, badly restricting work on site. Keen to continue enquiries into the deposits at the Limeworks there, Dart had tons of breccia transported back to the Medical School where the painstaking extraction of each fossil bone was carried out by Dart and his helpers. Might his determinations on these fossil bones found there once more prove heretical!

Winds of change as well in the political scene were ushered in with the defeat of the Smuts Government in the 1948 elections by the Nationalists led by D. F. Malan who became Prime Minister. Smuts, statesman, soldier, Prime Minister from 1919-1924 and 1939-1948, a man of tremendous ability and achievement, though not altogether popular with his own Afrikaners, accepted the offered position in England of Chancellor of Cambridge University. Two years later on 11 September 1950 Smuts died at his home at Irene near Pretoria. Once in power the new government sanctioned by law, racial segregation by the Apartheid ('apartness') system, determining also political and economic discrimination between South Africa's white minority and non-white majority. Oppressive 'Pass-laws' were imposed on non-whites; Bantu homelands being created in 1951. Land laws favoured whites. The position worsened from 1960 when South Africa became a Republic and lost its membership of the Commonwealth in 1961.

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6 Gordon Smith, 'The Dart Prize', *Ipswich Grammar School Magazine*, 1975, p. 20.

In a police state of cruelty, informers planted in Universities and Government Departments and elsewhere, public rioting fermented against inhumane treatment. Gaolings and murder became the norm, a situation which determined international sanctions of South Africa by other nations. Businesses slumped, bleak prospects for research prevailed; liberal institutions tried to keep a glimmer of academic freedom and equal opportunity alive in the face of heavy political odds.<sup>7</sup> While in earlier years scores of international scientists surged to examine the wealth of Australopithecine fossils unearthed in South Africa, later the effects of the political regime deterred the interest of many anthropologists who sought safer conditions for research in more northerly countries of Africa. Lack of funds hampered research as did the massive exodus of many of the country's intelligentsia. Not until 1986, forced by international action, were pass laws and other repressive laws repealed, a new constitution initiated in 1994 giving all citizens the vote, did matters begin to improve. This was particularly so in the case for scientific research.<sup>8</sup> Today it is recognised, 'apartheid and religious fundamentalism robbed South Africa of its place as one of the most important centres in the story of human evolution.' Now the hundreds of early specimens extracted to date from its various sites, make it one of the richest human and animal fossil repositories in the world. Recognised as a primary site of human evolution, South African scientists are now free to define a clearer picture of humanity's path.<sup>9</sup>

Dart's interest in following through with his theories on the cultural status of the Australopithecines had never waned since his earlier papers of 1925, 1926 and 1934. In the latter paper he had included illustrations and gave reasons for the fractured baboon skulls from Taung and again pointed to the omnivorous diet of the man-apes, which he maintained included the eating of baboon flesh. With the discovery at Makapansgat of similarly fractured skulls of more baboons there, also at sites in the Sterkfontein Valley, he believed the man-apes were responsible for bludgeoning their prey by use of perhaps a stone, held in a wielding hand in close combat. When in South Africa in 1946-1947, Le Gros Clark on examining the damaged skulls, was acquainted by Dart of his ideas of the Australopithecine life-style. The English scientist suggested Dart undertake

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7 *Encyclopaedia Britannica*, 15th edn. 1994, vol. 1, p. 477; vol. 10, pp. 904-05.

8 Ockham's Razor Programme, National Radio, 2 FC Transcript, Australian Broadcasting Corporation, 4 Aug. 1988.

9 Sue Armstrong, 'South Africa—the missing pieces', *New Scientist*, vol. 143, no. 1933, 9 July 1994, p. 32.

a statistical analysis of all three sites to perhaps yield proof of such a theory. Ever grateful for this incisive direction, Dart followed this advice which he related set him 'on the track of what was to prove one of the most fascinating and rewarding studies of my life'. It would be the badly damaged australopithecine youth's skull which prompted him to study further the murderous and apparently cannibalistic manner of life of those violent creatures. His two papers on the subject in 1949 published in South Africa and the United States promoted shock and condemnation from fellow anthropologists.<sup>10</sup> Dart was astonished to find, 'how *antagonistic* the opinions of my fellow scientists were to the idea that man's ancestors had been like himself, predaceous, carnivorous and flesh loving.'<sup>11</sup> Today it is known that anthropophagy (cannibalism) was practiced by man from earliest to recent times on most continents<sup>12</sup>.

Dart had never been satisfied that a stone had caused the depressed fractures and some doubly-indentured fractures in these various skulls. Only an organized search for such a weapon of infliction would slake his quest for one. In fact he advised, 'I first approached the study of skeletal parts as tools as an anatomist who had been frustrated by the inability of anyone to find stone tools capable of explaining the wounds I had discovered in fossil primate skulls'.<sup>13</sup> Thus from tons of breccia transported from the Makapansgat Limeworks to the Anatomy Department and aided by his helpers, by 1955, from thousands of animal and Australopithecine remains, 7,159 bones were duly extracted and analysed. Among these he found his lethal weapons—the double-ridged ends of humeri or upper arm bones of antelopes—they fitted those fracture wounds. They were found commonly with their ridges broken in the grey breccia along with the skulls of baboons and Australopithecines, the suspect items confirmed by his fellow forensic medico. Other bones were identified from the wild dog, jackal, hyaena,

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10 Dart with Craig, *Adventures with the Missing Link*, p. 103; R. A. Dart, 'The bone-bludgeon hunting technique of *Australopithecus*', *South African Journal of Science*, 1949, vol. 2, pp. 150-152; 'The predatory implemental technique of *Australopithecus*, 1949, *American Journal of Physical Anthropology*, n.s. vol. 7, pp. 1-38.

11 Dart, 'Australopithecine acceptance and some of its effects', *Annual Proceedings Associated Scientific and Technical Societies of South Africa 1963-64*, Sept. 1965, p. 22.

12 *Encyclopaedia Britannica*, 15th edn. 1994, vol. 2, p. 804.

13 Dart, 'On the Osteodontokeratic Culture of the Australopithecines', *Current Anthropology*, vol. 12, no. 2, Apl. 1971, p. 233.

leopard, sabre-toothed tiger cat, hare, porcupine, bucks of kudu, roan antelope, wildebeeste, gazelle and duiker, fossil horses, extinct relatives of the zebra, chalicotheres, fossil giraffes, rhinoceroses, hippopotamus, wart hogs. He found many of the bones, teeth and horns had been fashioned in some manner for use, and showed wear from use—and he termed this the Osteodontokeratic Culture. Armed with these observations he set out to attend the Third Pan-African Congress on Prehistory from 22-28 July 1955, at Livingstone, Northern Rhodesia (now also known as Maramba, Zambia). At that congress, Van Riet Lowe would also report on the Kafuan Pebble Culture from Makapansgat, (earliest simple pebble tools chipped to an edge on one side only), samples of which were found by C. K. Brain in 1954 in the next layer (above the lowest grey breccia bone-bearing level), and in which also the presence of Australopithecine remains were later established.<sup>14</sup> Together with thousands more pebble tools of quartz and quartzite found by Alun R. Hughes and Revil Mason - Dart now considered this as a clue that stone tools followed bone tools and may have been used conjointly then and found to be the practice later. In the 1930s Louis S. B. Leakey and Mary Douglas Leakey (*née* Nicol) had found and named in the Olduvai Gorge in Tanganyika (now Tanzania) the Oldowan Industry of pebbles worked on two faces. Controversial as Dart's earlier work on Taung had been, aspects of this latest research at the Makapansgat Limeworks on fossils, would bring shock and derision from many. As Revil Mason points out, 'Again Dart was ahead of general opinion and few accepted his views'.<sup>15</sup> However at this time there was another reason which had unsettled delegates at this conference— stark revelations about the Piltdown material!

On 30 July 1953 the London conference on 'Early Man in Africa', organised by Kenneth Oakley at the British Museum (Natural History), courtesy of the Wenner-Gren Foundation, Joseph Weiner of Oxford University provided a fuse, which when lit, would blast Piltdown into extinction. Joseph Sidney Weiner, reader in Physical Anthropology at Oxford, later Professor of Environmental Physiology at the London School of Hygiene, had in earlier years qualified under Dart at the University of the Witwatersrand for his Science and Medical degrees,<sup>16</sup> and imbibed from his

14 Dart with Craig, *Adventures with the Missing Link*, pp.120,145-163.

15 Revil Mason, *Prehistory of the Transvaal*, Witwatersrand University Press, 1962, p.28.

16 P. V. Tobias, *The John Irvine Hunter Memorial Lecture for 1992*, The Department of Anatomy, University of Sydney, 1992, p.16.



teacher the need for enquiry and of challenge—to go that step further to find proof to sustain such challenge. Ever remembered by Weiner and others was Dart's philosophy, 'To cease achieving skill by well-directed work during life is to die in that respect; just as surely as partial or complete death results from cessation of intra-uterine activities. Life is movement!'.<sup>17</sup> As one of the privileged delegates allowed viewing of the original Piltdown specimens at the British Museum during the conference in 1953, (generally only casts were shown or supplied), and by later over dinner discussions with Oakley and S. L. Washburn, Weiner became convinced of curious discrepancies in these remains. The story is well known today. Weiner was bold enough to experiment with a chimpanzee jaw, inflict similar damage, file down and stain it and other artefacts, and visit the sites of Piltdown's discovery. When no longer in doubt about his initial suspicions he confided his findings to his chief, Professor Le Gros Clark. His chief acted immediately and in strict confidence requested Oakley to undertake new fluorine tests of the original items. Their exposure of deliberate fraud published in joint papers in 1953 and 1955, astounded the scientific establishment.<sup>18</sup> The enigma was solved, but not the perpetrator. Over the years scores of suspects were pointed to, but just as these remains had fooled the most eminent scientists for forty years, it would be another three decades before some credible proof of the culprit would be forthcoming. Yet, fortuitously it could have been Joe Shellshear who might have earlier hastened Piltdown's exposure. As N. W. G. Macintosh would later write to Dart, 'If he had written it up, it would of course have given him precedence over the ultimate revelation by Weiner, Oakley and Le Gros Clark'.<sup>19</sup> Shellshear, a highly religious man, is seen to be in obvious torment over this matter. Macintosh remembers Dart's compassion at that time for his friend and advised Dart, 'Even though he wouldn't do it, your comments were of extreme therapeutic value in restoring his sense of personal self-respect academically'.<sup>20</sup> There is little doubt that but for Robert Broom's further sustained discoveries of Australopithecines in

17 Dart, 'The Significance of Skill', *Transvaal Education News*, 1934, vols. 10,11,12, pp. 39-41; 13-17; 15-17, of an address given to Transvaal Teacher's Congress, 2 Oct. 1934; later republished with other Dart lectures as *Skill and Poise: Articles on Skill, Poise and the F. M. Alexander Technique*, Stat Books, London, 1996, p.5.

18 J. S. Weiner, K. P. Oakley, W. E. Le Gros Clark, 'The solution to the Piltdown problem', *Bulletin of the British Museum of Natural History (Geology)*, 1953, vol. 2, pp. 141-146; 'Further contributions to the solution of the Piltdown problem', *Bull. Brit. Mus. of Nat. History (Geology)*, vol 2, no. 6, pp. 225-287.

19 Shellshear Museum Archives, Medical School, University of Sydney, N. W. G. Macintosh. letter to R. A. Dart, 12 June 1955.

20 *ibid.*

the Sterkfontein Valley in the 1930s and his stalwart support of Dart's discovery from the beginning, the Piltdown charade may well have extinguished Dart's 1924 seminal discovery. Most fortunate then was its obliteration in 1953. Of his adversaries over his Taung skull and the Piltdown enigma, Dart would reveal his munificence—only Sir Arthur Keith had lived to witness Piltdown's demise—he would die soon after in January 1956, aged 87 years. Writing of his esteemed mentor Sir Grafton Elliot Smith who died on 1 January 1937, Dart recorded:

His death was a sad blow to his friends. But he was spared the agonies of the following decade that brought the Second World War, that did little to justify his concept of early human nature; and the readjustments in his thinking that Keith faced so graciously in 1947 when australopithecine bipedality could no longer be logically resisted. Most painful of all to an individual of his probity and sensitivity would have been the regret that the Piltdown bones had been so totally and egregiously a fraud. Most fortunate of all was his salvation from distress and humiliation he would have experienced not only for his own, but also Johnny Hunter's wasted efforts in reconstructing that skull, whose fallacious seductiveness had been coincident with and was probably based upon his own hypothesis, which repetitive australopithecine discoveries had rendered so improbable as to evoke the exposural process.<sup>21</sup>

Thus in an atmosphere of unsettled disbelief still over Piltdown, delegates arrived in Livingstone in July 1955, and to which Dart had brought dozens of crates containing his bone, tooth and horn *armamentarium* to display.<sup>22</sup> Though Dart had expected a cold reception of his heretical claims, to be opposed by walls of orthodox archaeological dogma—that tool-making began with stone, he could not have imagined the insulting treatment he would receive. He was cast as the last speaker with only twenty minutes to cover his material. This adversity he graced with his usual resilience, and as one of his colleagues remarked ironically, 'One of Dart's biggest breaks came directly after one of his biggest insults'.<sup>23</sup> Undaunted, Dart demonstrated outside in a suitable area the skinning and dismembering of an animal with some of his Osteodontokeratic tools. One among few onlookers was Leighton Wilkie, a wealthy American tool inventor and manufacturer, who had sponsored some of his country's delegates to the

21 Dart, 'Associations with and Impressions of Sir Grafton Elliot Smith', *Mankind*, vol. 8, no. 3, June 1972, p. 175.

22 'Queenslander Changed Evolution Theories', *Sunday Truth*, Week-end Feature, Sydney, 24 Apl.1966.

23 James Clarke, *Saturday Star*, Spectrum, Johannesburg, 26 Nov. 1988, p.11.

conference and would help finance the publication of the conference proceedings, including Dart's paper. Dart's demonstration both captured and surprised Wilkie who had long been searching for information as to how tools had actually evolved. So infuriated was he by the treatment given Dart—amazed so many rejected his ideas, he immediately wrote him out a cheque for \$3,000 to continue his dig at Makapansgat. Had it not been for the generosity of Wilkie then and his increased financial support over the years and some funds from the Wenner Gren Foundation, it is doubtful if Makapansgat would have been saved from blasting by toothpaste manufacturers who had already been mining there for minerals.<sup>24</sup> Despite his guillotined talk in 1955, the Transvaal Museum in 1957 published Dart's 105 page Memoir of his findings at Makapansgat.<sup>25</sup> (figs. 97-98).

While he had successfully searched for and found forgotten early documentation of bone tool discoveries (Bächler 1905-06, 1920-21 and 1928; Hörmann 1933; Zotz 1934 and Franz 1936) at European sites and found these most valuable, it would be the Abbé Breuil's (1939) analysis of the 'Bone and Antler Industry of the Choukoutien *Sinanthropus* site'<sup>26</sup> which gave him most confidence about his Australopithecine claim.<sup>27</sup>

Dart gained further confidence by the request in 1955 and publication by the Smithsonian Institution in Washington of his recent researches on *The Cultural Status of the South African Man-apes*,<sup>28</sup> and in the following year by honour from the University of Natal, conferring on him a Doctor of Science Degree *honoris causa*. Additionally in July of that year he became the honoured representative of the South African Association for the Advancement of Science at the French Association's Dijon meeting, receiving while there a commemorative medal for his achievements in science. Previously in 1953 he had headed the South African Association for the Advancement of Science. In 1956 he attended the First International Congress of Human Genetics at Copenhagen, the British Association for the

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24 *ibid.*

25 Dart, 'The Osteodontokeratic Culture of *Australopithecus prometheus*', *Transvaal Museum Memoir*, No.10, 1957, pp.1-105.

26 H Breuil, 'Bone and Antler Industry of the Choukoutien *Sinanthropus* site'. *Palaeontologia Sinica*, n.s. D. 6, 1939, pp.1-40, 26 pl.

27 Dart, 'The Abbé Breuil and the Osteodontokeratic Culture', *Diputación Provincial De Barcelona, Instituto De Prehistoria Y Arqueología*, Barcelona, 1964, p. 349.

28 Dart, *The Cultural Status of the South African Man-apes*, in *The Smithsonian Report for 1955*, pp. 317-338, Smithsonian Institution, Washington, 1956.

Advancement of Science annual meeting at Sheffield and in Philadelphia the International Congress in Anthropological and Ethnological Sciences. Also in that year he was elected a corresponding member of the Academy of Sciences of Lisbon as well as visiting numerous museums on the Continent, representing the Ernest Oppenheimer Institute for Portuguese Studies of the University of the Witwatersrand. Honours were showered on him in America on 7 March 1958 with the Viking Medal and an award of \$1,000 for 1957 from the Wenner-Gren Foundation for Anthropological Research, by nomination of the American Association of Physical Anthropologists. The citation stated that Professor Dart :

recognised the significance of the finds made at Taungs in 1925 and defended his interpretation of *Australopithecus* against widespread scepticism; he continued to search and discover hominid fossils; and, thus, he has led the way to the intensive research in physical anthropology in South Africa to-day.

To commemorate his scientific achievements, South Africa had further honoured Raymond Dart two years previously in 1956 by the establishment of the Institute for the Study of Man in Africa.<sup>29</sup>

Robert Ardrey came to meet Raymond Dart in 1955, a visit which would culminate in further fame for these two men. A graduate of the University of Chicago with an interest in science, Ardrey had turned his hand to being a reporter and dramatist, then inspired by Dart's theories would absorb these, while himself delving more deeply into human origin and behaviour and embrace his endeavours in four important books. These found international popularity as best sellers for many years. Entitled *African Genesis*, *The Territorial Imperative* and *The Social Contract*, Ardrey's turn of phrase set the tone of his reflection on humanity's makeup:

Our ancestry is firmly rooted in the animal world, and to its subtle, antique ways our hearts are yet pledged. Children of all animal kind, we inherited many a social nicety as well as the predator's way. But most significant of all our gifts, as things turned out, was the legacy bequeathed us by those killer apes, our immediate forebears. Even in the first long days of our beginnings we held in our hand the weapon, an instrument somewhat older than ourselves'.<sup>30</sup>

29 Phillip V. Tobias, 'Raymond Arthur Dart : Biographical Sketch and Appreciation', *The Leech*, vol. XXV111 (3,4 & 5), Nov. 1958, pp. 90-91.

30 Robert Ardrey, *African Genesis: A Personal Investigation into the Animal Origins and Nature of Man*, Collins, 1961, 8th impression, The Fontana Library, 1972, p. 7.

Ardrey's first book, *African Genesis* drew supportive comment on its dust jacket: Jaquetta Hawkes of the *Observer*: 'This is an extraordinary and stimulating book. Robert Ardrey has bridged the gulf between our "two cultures"!' Kenneth Oakley of the British Museum would comment dramatically: 'A new and radical interpretation of human behaviour...deserves the most serious attention on the part of scientists as well as laymen'. Anthony Jay of *Nova*, quoted on the dust jacket of *The Social Contract*, had no doubt of the impact of Ardrey's books: 'If I believe that Robert Ardrey's three books are the most important to be written since the war, and arguably the most important books of the 20th century, it is because he has combined to a quite unbelievable degree the demands of the ignorant layman and those of the responsible scientist'. Later Ardrey's, *The Hunting Hypothesis* gained further popularity when published in 1976 by Atheneum, New York.

From their first meeting Raymond and Marjorie Dart became lifelong friends with Robert Ardrey and his wife Berdine (*née* Grunewald) a talented South African actor and artist who illustrated her husband's books. The Darts often visited the Ardreys at their Rome residence on their numerous overseas journeys to scientific conferences. Ardrey could never fathom the secret of Raymond's amazing energy and would often relate that after vigorous discussions deep into the small hours of the morning, while his younger hosts' energy faded, Raymond's remained abundant and undiminished on rising the following morning.<sup>31</sup>

By 1959 from the Olduvai Gorge of the Serengeti Plain, northern Tanganyika (now Tanzania) came further unequivocal support of Dart's 1924 seminal discovery when Mary Leakey unearthed the first specimen found outside South Africa, of a robust Australopithecine similar to those found by Broom and Robinson in the 1930s and 1940s at Kromdraai and Swartkrans. Its hallmarks were unmistakable—huge pre-molar and molar teeth while the incisors and canines were small, and possession of a sagittal crest along the top of its skull for attachment of its large masticatory muscles. Affectionately known as 'Dear Boy' to the Leakeys because their search for early man had so long eluded them, it was named by the press, 'Nut-cracker Man', because of its huge jaws; and scientifically as *Zinjanthropus boisei* (after the Leakey's benefactor). It was reclassified ten

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31 Robert Ardrey interview by F. Wheelhouse, Johannesburg, 20 Mar. 1973.

years later by Phillip V. Tobias as *Australopithecus boisei*. A few weeks after its discovery it became the showpiece at the Fourth Pan-African Congress on Prehistory at Léopoldville, Belgian Congo (now Kinshasa, recently the Democratic Republic Congo, formerly Zaire). Soon its age would be accurately established as 1.75 million years. In 1959 Evernden and Curtis of the University of California, had developed their new tool for dating, a method using Potassium Argon in volcanic areas. This could now go further back than the earlier Nobel-prize winning Carbon 14 dating system of Professor Willard F. Libby of Yale University, with its time frame to about 40 000 years for non-volcanic regions. A new episode not only in dating had begun but ushered in also was a new wave of further discoveries of early humankind at Olduvai, Lake Turkana (Kenya), Ethiopia and elsewhere on the African continent.<sup>32</sup>

The decade of the 1950s had been an exceptionally busy one for Dart and his staff—preliminary to his retirement at the end of 1958. Work pressed on apace at Makapangat Limeworks. (fig. 99). Opposed by others, Dart, to his own satisfaction ran to ground as myths, bone-accumulation by hyaenas and porcupines; discovered more crucial evidence of Australopithecines' handiwork of horns and bones rammed into other bones; of the wedging of a bone flake or a tooth into the interarticular clefts of cannon bones; of fashioned flakes to sharp knife-like edges; of bones fashioned for pounders and scoops. Above all the exciting discovery in the lowest level; the grey breccia, of the first quartzite stone flake.<sup>33</sup> Striations on bones and stone flakes indicated use and method of use. Dart realised that a consecutive chronology of mankind from this development from the man-ape, through the Osteodontokeratic Age, through the pebble-using and Stone Ages was now patent for further assimilation. (figs. 99-102). His interpretation of the new Makapansgat remains has found endorsement in

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- 32 G. Philip Rightmire, *The Evolution of Homo Erectus: Comparative Anatomical Studies of an Extinct Human Species*, Cambridge University Press, 1990, pp. 57-58; R. A. Dart, 'Recollections of a Reluctant Anthropologist' *Journal of Human Evolution*, vol. 2, 1973, p. 425; W. W. Howells, *Getting Here: The Story of Human Evolution*, The Compass Press, Washington, DC, 1993, pp. 82-85.
- 33 Dart, 'The Myth of the Bone-Accumulating Hyena', reprint, *American Anthropologist*, vol. 58, no.1, Feb. 1956, pp.40-62; 'The Bone Tool-Manufacturing Ability of *Australopithecus Prometheus*', reprint, *American Anthropologist*, vol. 62, no. 1, Feb. 1960; 'Osteodontokeratic Ripping Tools and Pulp Scoops for Teething and Edentulous Australopithecines', reprint, *Journal Dental Association of South Africa*, vol. 14, no. 5, 1959, pp 164-178'; 'The Makapansgat Australopithecine Osteodontokeratic Culture', offprint, *Proceedings of the Third Pan-African Congress on Prehistory, 1955*, pp. 161-171.

Dr S. A. Semenov's microscopic studies over a long period of traces of work on bone tools and artefacts, published in Russian in 1957 by the Academy of Sciences of the USSR and translated in 1964 (S.A. Semenov: *Prehistoric Technology, and Experimental Study of the Oldest Tools and Artifacts from Traces of Manufacture and Wear*, London, Cory, Adams and Mackay 1964). Semenov found that, studying the markings on the bones, the striations reveal the direction of the tool during use and so allow its purpose to be identified with fair confidence. He also pointed out a 'method of dividing bone transversely and longitudinally in upper palaeolithic times was by cutting with a burin, 'The invention of the burin by the australopithecines can be regarded as a great step forward in the field of technology'<sup>34</sup> More recently confirmation in 1987 of bone tool use was made using electron microscope scanning by Pat Shipman at the Johns Hopkins University Medical School, Baltimore, USA.<sup>35</sup>

When in 1950, J. Stander, Postmaster at Pietersburg found bones and quartz flakes at Kalkbank, 112 kilometres northwest of the Makapansgat Valley; Revil J. Mason investigated the site four years later. On confirming it to be a Middle Stone Age site with the remains of forty-eight beasts, mainly antelopes and wart hog, with huge giraffe bones obviously split and flaked by a hafted stone axe, Mason advised Dart. Soon realising the comparison of similar work on bones at Makapansgat Limeworks, he, with James Kitching and Revil Mason made a thorough assessment and comparison of long bones and fragments from each site. There was no doubt of their similar treatment.<sup>36</sup> (fig.103). In 1958 Leslie A. Armstrong had arrived in Johannesburg to talk on the bones he had excavated years previously from the Pin Hole Cave in Derbyshire, England. He could not believe the similarity of the South African cave bones to his found in England. He promised to send particulars of these on his return but this was prevented by his unfortunate death shortly afterwards while in Johannesburg. Leighton Wilkie provided funds for James Kitching to carry out this analysis, which Kitching achieved in 1959 and published his assessment of 11 594 osteodontokeratic fragments from Pin Hole in 1963.

34 F. Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile : Profeser Dart's Discovery of 'The Missing Link'*, Transpareon Press, 1984, pp. 74-77.

35 C.K. Brain, ( ed.), *Swartkrans: A Cave's Chronicle of Early Man*, Transvaal Museum, 1993, pp. 3, 17.

36 R. Mason, J. Kitching and R. A. Dart, 'Bone Tools at the Kalkbank Middle Stone Age site and the Makapansgat australopithecine locality, Central Transvaal', *South African Archaeological Bulletin*, vol. 3, 1958, pp. 85-116.

(fig.103,104). In this he confirmed Mousterian man's use of bone, tooth and horn culture previously recorded by earlier researchers such as Bächler and Breuil and others for Europe and Asia, who found humeri and various animal bones had also been spirally split, flaked and used as implements, as similarly executed by the Australopithecines at Makapansgat Limeworks.<sup>37</sup>

Wide was Dart's canvas of activities and while continuing to embrace his absorbing research at Makapansgat, Dart produced numerous papers on other topics. These included: Medical (2); Education (4); General Palaeo-anthropology (7); Physical Anthropology (10); Prehistoric Migrations (6); Symbolism and Ritual (3); Anatomy of *Australopithecus* (14); Culture of *Australopithecus* (23); Prehistoric Animals (1); Apes (1); Reviews and Prefaces (4); Miscellaneous (4) as well as his book, *Adventures with the Missing Link*, written with Dennis Craig and published in several languages.<sup>38</sup> He travelled widely presenting some of his papers in various cities in South Africa, and some in other countries; three examples are given In March 1951 in Cape Town he presented, 'African Serological Patterns of Human Migrations', while in July 1953 he presented 'The Southern Aspect of Pulsating Humanity' in Bulawayo, Southern Rhodesia (now Zimbabwe); in Johannesburg in 1954 he gave eight talks on the South African Broadcasting Corporation on 'The Oriental Horizons of Africa',<sup>39</sup> also published as a book.

Retirement came around all too quickly for Dart at the end of 1958; the years seemed to have flown since his arrival in 1923 to the Chair of Anatomy which he held for thirty-six years, eighteen of which he served also as Dean of the Faculty of Medicine. (fig.105, 106). For decades Professor Dart had dazzled his associates and students with his brilliant neurological research and fossil discoveries and by imparting his medical knowledge. Already many of his earlier students had made their own famous discoveries and published them. Their adventurous journeys into the wild with Professor

37 J. W. Kitching, *Bone, Tooth and Horn Tools of Palaeolithic Man: An Account of the Osteodontokeratic Discoveries in Pin Hole Cave, Derbyshire*, Manchester University Press, XIV, 1963, pp.1-55, illus.

38 Ilse Fisher, 'The Published Works of Raymond Arthur Dart', University of the Witwatersrand, 1969, pp. 1-37.

39 Dart, 'African serological patterns and human migrations', 1950 Presidential Address, Cape Town, South African Archaeological Society, given 6 Mar. 1951, pp.1-39; 'The Southern Aspect of Pulsating Humanity', reprint, *South African Journal of Science*, vol. 50, no. 2, Sept. 1953, pp. 37-49; Dart, *The Oriental Horizons of Africa*, S. A. Broadcasting Corp. Johannesburg, 1954, pp. 1-24.



Dart, oftimes hazardous, always exciting, thrilled each new intake of young aspiring scientists; many following in their master's footsteps - to them the best neurologist, anthropologist and adventurer of them all.

Apart from the beautiful presents Professor Dart and Marjorie received from his staff and students on his retirement in December of 1958, another gift delivered to him by James Kitching in that same month—a large block of pink breccia from Phase 2 Makapansgat Limeworks, in which clearly was visible a most perfect adult skull of *Australopithecus prometheus* together with several baboon skulls, surely must have been most portentous and fortuitous.<sup>40</sup> (fig.107). With Emeritus status to be granted him the following year (1959), assurance of funds for research from the Wilkie Foundation and supplementary funds from The South African Council for Scientific and Industrial Research and the Research Committee of the University of the Witwatersrand, backing from the University Council if other funds failed; a laboratory to store the fossils; a place to work in the Bernard Price Institute for Palaeontological research quarters; the University Council's promise for him to work for as long as he was able after retirement, Dart commented, 'How can I stop?'<sup>41</sup> Free from the hustles of teaching and administration, happily inspired by these offers and James Kitching's new fossil discovery, he was all set for exciting future multiple challenges in research. First though he and Marjorie would relax and enjoy a lengthy overseas holiday during which time they would visit the lands of their forebears, Ireland, Scotland and England, with time on the Continent and America for renewing past friendships.<sup>42</sup>

### Multiple Challenges

There seems little doubt that Wilfred Eitzman's reacquaintance with Raymond Dart on 3 May 1957 and his recounting of his personal visits from 1922 to the Limeworks, further whetted Dart's insatiable need to promote a huge onslaught of enquiry there on several fronts. Eitzman's description of the stratigraphical layout of the Limeworks, explained on that visit to Dart in

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40 Dart, 'Australopithecine acceptance and Some of its Effects', *Annual Proceedings Associated Scientific and Technical Societies of South Africa 1963-64*, Sept. 1965, p.21

41 Dart with Craig, *Adventures with the Missing Link*, p. 239.

42 Harold W. Dart, *Happenings Historic, Heroic and Hereditary*, Sydney, 1981, pp. 12-13.

the presence of Robert Ardrey and Alun R. Hughes, is both illuminating and historical also vitally important. Eitzman who had arrived in Pietersburg to teach in 1919, first heard of lime being collected from the hills and caves by farmers and of bones in the lime from the Boer farmers who thought them proof of Noah's flood. Eitzman after meeting the geologist Maxwell who advised him of the unique richness of the fossil beds at Makapansgat would make many visits to the fossil area from 1922 to 1944. In 1928 he took there Othenio Abel, various scientists who came to the British Association Meeting in 1929, and Lidio Cipriani in 1930. Dart also travelled there in 1930. Dart told Eitzman that during his passage inward through the tunnel-like excavations he saw 'a bone-layer in the left-hand side, at least two feet six inches in thickness, which extended horizontally inward for a hundred feet or more, and that there seemed to be other bone-layers as well'. Mining by the White Lime Company since 1924 had changed the scene substantially when Dart arrived again in 1945 and worried him since he had not been able satisfactorily to correlate the divergences. Eitzman's clear, graphic account of the original pristine state enlightened and heartened Dart; Eitzman explained:

There were three very prominent layers separated by white lime of great purity. The one you are speaking about was the thickest, the middle layer, not two feet six inches but at least three feet thick and fully four feet near the front and even seven feet near the bend in the tunnel. Six feet of greyish lime lay below it and there, above the stalagmitic floor and a thin layer of red earth, was a bottom bone-layer about two feet thick. Twelve to fourteen feet above the thick middle layer was a third irregular bone-layer that varied from little or nothing up to three feet in thickness in places. The two lower bone layers were greyish in color, the highest of the three was more yellowish and pink. Above that top bone layer came the pink, reddish and almost brown layers of earth.<sup>43</sup>

On 25 June Dart took W. Eitzman, R. Ardrey, A. Hughes, J. Kitching and C.K. Brain to Makapansgat. There Eitzman was able to identify the position of the layers he saw in the early 1920s - then a huge deposit. Lamentably at that time when Eitzman asked the mine manager, Mr Darling to save any unusual fossils, this confirmed fundamentalist ordered his men that all fossil remains remotely resembling a man or a monkey be tossed into the kilns. Thus the richest bone deposit had disappeared by this action.

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43 Dart, 'The Minimal Bone-Breccia Content of Makapansgat and the Australopithecine Predatory Habit', reprint, *American Anthropologist*, vol. 60, no. 5, Oct. 1958, pp. 923-31.

Fortunately a photo sent to the *Star* by Eitzman with his article and retrieved by Dart confirms this deposit.

Invited by Dr L. S. B Leakey to visit Olduvai Gorge in 1960, Dart met there also Professors C. Arambourg and J. Desmond Clark. (fig. 108). He was vividly impressed with the number of irregular and polyhedral stone objects present at the bottom of the Gorge and also on the living floor of Bed 1 compared with those few which had been flaked. On pondering why the unflaked pebbles had been carried there from a considerable distance, Clark suggested their use as 'just bashers'. Many such transported pebbles would be identified by Brian Maguire from the early 1960s at Makapansgat Limeworks, which he adjudged had been used 'purposefully and variously'. He would sort and study thousands of pebble tools which also had worked faces and provide information as to their use and find the quartzite pebbles had been introduced into the caves.<sup>44</sup> (fig. 109).

By 1960 Dart planned further full-scale enquiries at Makapansgat to determine several factors at the Limeworks and superintended by Brian Maguire. The whole huge area was fenced off, cleared, grid stanchions implanted, trenching in places to 18 metres deep, removal of Phase 2 material in certain areas to determine more accurately the Upper Phase 1 pink breccia and contents of both layers, taking into consideration a huge collapsed cone of material. Special dumps (figs. 110, 111) for extracted material were established for later analysis of all artefacts and skeletal material - work involving Brian Maguire, Alun Hughes, James Kitching, Adrian Boshier, Revil Mason, B. D. Malan, R. R. Inskeep, Judy. Maguire with scores of African helpers. For a clearer geological and stratigraphical assessment, Dart obtained once more the services of Dr C. K. Brain, now at the The Queen Victoria Museum, Salisbury, Southern Rhodesia (now Harare, Zimbabwe), also those of A. B. A. Brink, Lecturer in Geology at Wits and Brian Maguire. With Dart they would examine the Limeworks more critically. Brain's report would agree with Dart's interpretations. Then Dart initiated aerial photography in 1963 and geological mapping of the valley by A. B. A. Brink and T. Partridge aided by Adrian Boshier and the African William Makondo. T. Bekker made two soft board scale models of the whole quarry and cave deposit. Solution cavities were excavated by T. Partridge,

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44 Dart, 'Recent Discoveries During Excavation Preparations at Makapansgat, *South African Archaeological Bulletin*, vol. 20, 1965, pp.148-154.

R. First and Miss S. Morison. More quartzite flakes were found and described from the grey breccia.

Meanwhile back in the anatomy laboratory Dart in analysing Phase 1 grey breccia found in numerous breccia blocks, split stalactite pieces as hand-axes, variously formed bone tools, pointed stalactite pieces with spirally broken humeri and a rostrocarinate tool of chert. Concerning these discoveries in Phase 1 grey breccia and that of numerous foreign quartzite pebbles in Phase 2 breccia, Dart would hear in 1962 of some interesting aspects regarding such pebbles from Adrian Boshier. This intrepid adventurer, whose life's work has been recorded by Dr Lyall Watson in his book *Lightning Bird*, had just returned from four years in the Northern Transvaal and Bechuanaland, chiefly in the Makgabeng region northwest of Potgietersrus collecting and photographing cave paintings and gathering ethnological information. On examining Dart's bone implements from Makapansgat, he found a tibial flake to be identical with the tibia knives also made from split cannon bones by the Batlokwa tribe he had recently visited, and used particularly for separating the shell and nut from the fruit of the marula tree. On another occasion, Joan van Gogh (relative of the famous artist and later Mrs Boshier) advised Dart of the quartzite river pebbles on a sandy plain under the marula tree which had been chipped and pecked out from breaking the hard marula nuts to get their little kernels. Boshier would later furnish Dart with all these type specimens from that area—the continuity of application of the use of such artefacts from Australopithecine to the present time was claimed by Dart and Boshier to have been established.<sup>45</sup>

In 1960 fourteen more scientific papers were published by Dart, three on aspects of Makapansgat research, four concerning the African great apes and primate research in Africa and the need for their preservation; others on a comparison of *Pithecanthropus* and *Australopithecus* and the status of *Gigantopithecus* of Asia; on the Institute for the Study of Man in Africa; on 'The Recency of Man's Aquatic Past'; an obituary for Guy Atwater Gardner. Additionally he gave a series of lectures on the South African Broadcasting Corporation, later produced as a book entitled *Africa's Place in the Emergence of Civilization*.<sup>46</sup>

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45 *ibid.*

46 Ilse Fischer, 'The Published Works of Raymond Arthur Dart', University of the Witwatersrand, 1969, pp. 1-37.

In 1961 six papers were written by Dart, two on aspects of tools and utensils at Makapansgat; one on the preservation of mountain gorillas; two on aspects of physiotherapy and a substantial paper on 'Africa's Place in the Evolution of Man'. His 1962 production was fourteen papers, nine of which were on his Australopithecine work; one on functions of museums; the Foreword to R. J. Mason's important book, *Prehistory of the Transvaal*, while his paper, 'Death Ships in South West Africa and South-East Africa' reveals the graves of boats carved and painted in Sarawak. He wrote of 'The First South African Archaeological Tour', which Dart led to the principal archaeological sites of excavation in Israel.<sup>47</sup> On this trip Dart was accompanied by his son, Galen, with visits also to Crete, the Continent and England, on return from which his son's health had a set back, necessitating thereafter permanent hospitalisation.<sup>48</sup> ( fig.112).

From 1963 to 1970 Dart produced no fewer than sixty-four articles, books, forewords, reviews, obituaries and miscellaneous publications on wide ranging subjects: Medical Sciences (5); Education (5); General Palaeontology (6); Prehistoric Human Migrations, including Mining (11); Symbolism and Ritual (4); Anatomy of *Australopithecus* (4); Culture of *Australopithecus* (13); apes (2); Reviews and Prefaces (12); Miscellaneous (6).<sup>49</sup>

An urgent change in 1964 to one of his abiding interests, mining research, involved Dart in supervising one of the most important anthropological and archaeological discoveries and predicated on the Swaziland Archaeological Survey's concern that on the finding of stone tools, a proper archaeological survey must be made by the Anglo-American Corporation before commencing its mining of iron ore in Swaziland. On receiving a call to send someone to evaluate the site, Professor Dart, ever astute in his assessment of human nature and people's talents, chose his man. On listening to Adrian Boshier's exploits to date through Africa, Dart had already enticed him to exchange his personal nomadic pursuits across the African continent for work of a similar nature with him at the Bernard Price Institute for Palaeontological Research. He sent Boshier immediately

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47 *ibid.*

48 Shellshear Museum Archives, University of Sydney, Dart to N. W. G. Macintosh letters of 3 Jan. 1962 to 3 Mar. 1973; F. Wheelhouse, *Raymond Arthur Dart: a Pictorial Profile*, Transpareon Press 1984, p. 84.

49 Fischer, 'The Published Works of Raymond Arthur Dart', 1969, pp. 1-37.

with a geologist to the Bomvu Ridge on the Ngwenya Mountain in the north western highlands of Swaziland. (fig. 113). Boshier found the mine itself was forty kilometres south of Piggs Peak and three kilometres east of Oshoek, a border post of the Transvaal and Swaziland. On the mountain Boshier located numerous trench excavations, previously dug in ancient times and infilled with soil and rubble. What most impressed him was the variety of mining tools, fashioned from stone, which were shaped like picks, hoes, chisels and two-handed cleavers. He returned with some of these and news of his discovery of what he considered a new culture. 'Splendid mining tools', remarked Dart. A surprised Boshier questioned, 'How do you know?'. Dart quoted his 1930 trans-African expedition and his 1934 paper, 'The Discovery of a Stone Age Manganese Mine at Chowa, Northern Rhodesia'. Boshier remarked, 'You found this out before me'. Dart replied, 'Yes, about forty years ago!'.<sup>50</sup> Those findings had led Dart to propose in his 1934 paper that mining in Southern Africa also dated back to Stone Age times—a claim which met with widespread scepticism. Now three decades later from Bomvu, Swaziland haematite deposit came vindication of Dart's earlier assessments of ancient mining. (fig. 113, 114). A further surprise for Boshier was to learn of Dart's student expedition in July 1934 to Border Cave in Swaziland, 140 kilometres from Boshier's current site, and his declaration of it then as a Middle Stone Age site, and of Dart's further investigation of it with Dr H. B. S. Cooke, B. D Malan, Dr L. H. Wells and E. W. Williams and senior students from July 1941 to July 1942, (previously related above, Chapter 6).<sup>51</sup>

The current ore body in Swaziland had been recorded there in 1889, rediscovered in 1947 and by 1957-1959 Anglo American formed the Swaziland Iron Ore Development Company to explore the deposit - 48 million tons of ore reserve having been assessed. Earnest appeal from Dart to the company requesting immediate on site investigation gained its support with funds for Adrian Boshier from 1964 and Peter Beaumont in 1965. (fig. 114). It also enabled James Kitching, Dart himself and a host of others to undertake a seven-year programme of excavation. Boshier was invaluable not only in the field and because of his wide knowledge and experience, but because of his association with heads of state, including Zulu chiefs and by his remarkable relationship with Chief Ntunja Mngomezulu and his Indunas

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50 A. Boshier interview by F. Wheelhouse, Johannesburg, 5 Mar. 1973.

51 *ibid.*

(chiefs). In this manner, he helped gain vital permits, so necessary in apartheid South Africa to carry on this work. Boshier himself had been inducted as a White Witch Doctor by tribal Indunas in other areas. In Swaziland he would help quell the natives' fear of 'the gods of the underworld', which terror Dart had found haunted the natives earlier.<sup>52</sup>

Ten quarries were located, cut into a soft red type of haematite, abundant on Castle Peak. After ancient mining - it is established that over a million kilograms of ore had been removed, the huge area had been infilled with tools. Two caverns were located where specularite - a glittering black form of haematite had been extracted in which test pits revealed similar tools, also potsherds and hammerstones. In eighteen months half-a million artefacts of various ages were recovered, mainly from sites at or near Ngwenya. Some excavations were small, but three key sites had extensive trenching done—at Castle Quarry and the two adits, termed Castle Cavern and Lion Cavern. (fig. 114).

At Castle Quarry 2, stone mining tools in addition to refined ground stone objects, yielded also beads, bracelets and axeheads also fragments of rusted iron. Castle Cavern on the scarp face of Castle Peak also had been cut deeply into the haematite hillside also yielded similar tools in abundance and some fragments of extremely rusted iron. Lion Cavern at the base of the cliff-face on Lion Peak revealed Iron Age sherds overlying a few undiagnostic stone artefacts which revealed an early date of 7590 BC. This enticed more trenching after removal of a 5000 kilogram Middle Stone Age haematite slab blocking the entrance. Stone mining tools and tens of thousands of implements belonging to the Middle Stone Age were found immediately overlying mined bedrock. Its dating astounded at 20 330 BC so the researchers sank a final trench on the outer hillside in 1967. Its charcoal sample sent to the Groningen Carbon Dating Laboratory in Holland came back in 1969 with a phenomenal reading of 41 250 BC and seven times older than the earliest dated flint mines of Western Europe. This claim would be challenged by others. In true Dart fashion he called for the services of experts on dating techniques known at that time; carbon dating laboratories at Yale, USA; Groningen, Holland, and Pretoria, South Africa; The Institutes of Geophysics and Planetary Physics, University of California;

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52 A. S. Brink, unpublished notes, undated, pp. 21-14; A. Boshier, 'Ancient Mining of Bomvu Ridge', *Scientific South Africa*, May 1965, pp. 317-320.

Collagen testing at the University of California, Amino Acid Racemization Reaction testing there also, Thermoluminescent testing at the University of Birmingham, and at the British Museum nitrogen, fluorine and uranium testing by Dr K. P. Oakley. Numerous experts were enlisted from the Chamber of Mines of South Africa, from the Genetics Department of the University of Pretoria and the Botany Department of the University of Bloemfontein, Judy. M. Roets (later Maguire) from the Bernard Price Institute for Palaeontological Research, Professor P. V. Tobias from the University of the Witwatersrand Medical School, also some informed amateurs. The latest techniques proved well beyond the limit of the Carbon Dating system with its limit then being to 60 000 BC. The researchers commented:

The most dramatic conclusion arising from these dating discoveries was that Southern Africa was quite probably the evolutionary homeland of modern man, *Homo sapiens sapiens*, some 100 millennia ago—a finding in marked contradiction to the traditional view that he arose in the Near East subsequent to 40 000 BC, but in good accord with the early advent of mining in Swaziland.<sup>53</sup>

[Current dating for anatomically modern *Homo sapiens* from Kafzeh, Qafzeh, Israel is from 115 000 to 90 000 years ago] To test their revolutionary hypothesis the researchers decided to re-excavate Border Cave on the western face of the Lebombo Mountains, just north of the Ingwavuma River gorge and 140 kilometres from Ngwenya (figs. 113, 114) and first investigated by Dart in 1934 and also in 1941–42. On the latter occasion of particular importance was discovery of an infant skeleton of morphologically modern type, lying in a shallow grave with funereal items and red ochre within the upper levels of the Middle Stone Age stratum. At that time there was no radio carbon dating method and unfortunately its great antiquity did not claim interest.<sup>54</sup> Re-excavations in Border Cave in December 1970 and January 1971 provided sensational results—hundreds of thousands of bones and stone artefacts, twigs, leaves and grass, feathers, antelopes' hair and insect wings, a baboon fibula with a series of 29 notches incised along its length, (similar calendar sticks of wood are still in use today by some Bushman clans in South West Africa), from recent time to beyond 50 000 years—ground pigment down to bedrock, also arrow heads. In December 1970 was unearthed the greatest prize of all. Peter Beaumont explained:

53 Peter B. Beaumont, 'Border Cave—a Progress Report', *S. A. Journal of Science*, vol. 69, 1973, pp. 41-44; A. Boshier & P. Beaumont, 'Mining in southern Africa and the emergence of modern man', *Optima*, vol. 22, Mar. 1972, p.11.

54 Boshier & Beaumont, *Optima*, vol. 22, Mar. 1972, pp. 1-12.



A slightly exposed human femur-head was noted while setting up camp in the southern portion of the cave during December 1970. Excavation revealed the complete skeleton, bar cranium, of an elderly male, who had suffered from extreme arthritis, and who wore a heavy iron bracelet on his right wrist. He was lying on his side in a contracted position, directly on bedrock, at a depth of 25 cm. (fig. 114).

Thus the infant and the adult of Border Cave proved that anatomically modern humans were from Southern Africa more than 100 000 years ago and changed previous ideas of where modern man had arisen. Confirmed was the ancient practice of mining by those spiritually aware as evidenced from the habitual use of red ochre on buried dead along with artefacts and that even then man had a knowledge of counting, that man had developed:

a consciousness and an awareness of happenings and causes beyond the hard everyday needs of survival. This was the ascendancy of reason. He pondered the cause of the elements, of light and dark, sun and moon, their movement and influences. No longer was he content to be nature's guest. He began to probe and to find out why, or alternatively to fabricate reasons and explanations—mythologies to satisfy his growing curiosity. Thus arose an intellect and here began the growth of religious belief with all its symbology and ritual.<sup>55</sup>

The search for bloodstone for pigment played a vital role in leading mankind to search for other metals and to use them to advantage.<sup>56</sup>

Clearly then it was Dart and his team at Border Cave in 1934 who first discovered an anatomically modern infant human form in Southern Africa and substantiated this with the adult form in 1970. Recent data has shown that the hominid finds from the Border Cave are between 110 000 and 90 000 years old. These estimates are based on correlation of climatic and cultural evidence from other African sites and genetical studies. Specimens at Klasies River Mouth Cave in Cape Province have been found and dated about 115 000 years old, and those of Jebel Qafzeh Cave site in Israel are considered to be 115 000 to 90 000 years old.<sup>57</sup>

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55 Peter B. Beaumont, 'Border Cave—A Progress Report, *S. Afr. J. Sci.*, vol 69, 1972, p. 44; Boshier & Beaumont, 'Mining in Southern Africa and the emergence of modern man', *Optima*, vol. 22, Mar. 1972, p. 1.

56 Dart, 'The bloodstone source of metallurgy', *Trabalhos de Anthropologia e Etnologia*, vol. XX1, 1969, p. 128.

57 *E. Britannica*, vol. 18, p. 834; vol. 17, p. 916.

Meanwhile in the mid 1960s Dr C. K. (Bob) Brain had returned from the museum in Southern Rhodesia (Zimbabwe) to fill the position at the Transvaal Museum when Dr John T. Robinson left to work in America. A great admirer of Raymond Dart, it was, he says, his numerous discussions with Raymond Dart which led him 'to crave for an opportunity to study a different bone assemblage from an australopithecine cave site and to see what light this could throw on Dart's concept of the 'predatory transition from ape to man'. Swartkrans cave provided him with this chance. However, after noticing what happened to defleshed goat bones by natives in the Namibian desert, subsequent gnawing of them by dogs, and noticing their final appearance to be similar to some from the Makapansgat Caves, he approached Raymond Dart that this might be a new theory for such resemblance. Dart congratulated him on his ideas, nominated him for an award to continue his work, even though it seemed to challenge some aspect of his own theories. Bob Brain pointed out, 'This did not mean that hominids had not used tools at all but they need not have been responsible for the selection of every piece in the Magapansgat grey breccia assemblage'. Brain always considered that Raymond Dart's enthusiasm and gaining assistance for him for his new bone accumulation theory, 'was a measure of his greatness in science'.<sup>58</sup> Later finding bone and stone tools himself at Swartkrans he showed them in 1981 to Dart then aged 88 years old.(fig, 115) Brain wrote:

One of the pleasures of having found the bone tools was the opportunity of showing them to Raymond Dart who, though almost blind at that stage, retained a keen interest in the use of bone tools. He ran his fingers over each of the tapering points and then said: 'what do you think the ape-men used these for'. I replied that they seemed to have been used for digging. Dart was taken aback—'that's a most unromantic explanation' he said and, holding one of the points against my ribs, he continued 'I could run you through with this!' I fear that several of my taphonomic reconstructions struck this gentle, yet strangely bloodthirsty man, as hopelessly prosaic.<sup>59</sup>

For over twenty years Bob Brain and his colleagues achieved thorough stratigraphic and fossil bone collection of human and animal bones, artefacts and plants, mainly at Swartkrans with some work at Sterkfontein and Kromdraai. The results of these labours are recorded in

58 C. K. Brain, (ed.) *Swartkrans : a Cave's Chronicle of Early Man*, Transvaal Museum, Pretoria, 1993, p. 3.

59 *ibid.*, p. 4

numerous scientific papers and two valuable and handsomely produced books. Without doubt the inspirational information mustered in them by top scientists will provide basic grist for current and future palaeontologists.<sup>60</sup>

At Swartkrans, a much younger site than Makapansgat there has been verified both australopithecine and *telanthropus* species which John Robinson found in the late 1940s and since proven to be *Homo erectus*; yet another important South African discovery (and found earlier in Java and China). Doubt has been raised by some scientists that in fact *Homo erectus* could have fashioned the bone and stone tools found at Swartkrans. Other factors presented were that australopithecines were hunted by carnivores and were not hunters—quite a different approach to Dart's theory of the predatory australopithecine. As a result writers since then have not accepted Dart's australopithecine tool-making concepts from bones, teeth and horns. Since australopithecines were the only protohominid dwellers at Makapansgat 3 million years ago, it seems illogical to deny the evidence gained by Dart that they were responsible for inserting bones into other bones, fashioning flakes, wedging some flakes into clefts of other bones, as were teeth to be used as ripping tools; that they made spatulas and produced many other items including spirally split bones. The much published work on television and in books of scientists' observance of chimpanzees in the wild, (Jane Goodall and Sir David Attenborough and more recently of Richard Wrangham and Dale Peterson) show clearly the apes' activities of cultural tool making, and their action of rounding up prey in groups to kill. The australopithecines, Dart had suggested, must have been at least similarly capable of equipping themselves with useful weapons and behaving similarly. Wrangham and Peterson mention their further studies of apes in Zaire will help to decide whether murder and hunting among them may be more closely tied together than people are used to thinking<sup>61</sup> Emeritus Professor Derek Freeman expresses his ideas on the origin of human culture and behaviour:

in the light of the researches of the last half century or so, there is now no mystery regarding the primordial origin of human culture. From prehistoric archaeology and paleoanthropology we know that cultural achievements

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- 60 C. K. Brain, *The Hunters or the Hunted? An Introduction to African Cave Taphonomy*, The University of Chicago Press, pp.1-365; C. K. Brain (ed.), *Swartkrans: A Cave's Chronicle of Early Man*, Transvaal Museum, Pretoria, 1992, pp.1-270.
- 61 Jane Goodall, 'Feeding Behaviour of Wild Chimpanzees', *Symposium. Zoological Society London*, no. 10, 1963, pp. 39-47; 'My Life among Wild Chimpanzees', *National Geographic Magazine*, Aug.1963, pp. 272-308; Richard Wrangham & Dale Peterson, *Demonic Males: Apes and the Origins of Human Violence*, Bloomsbury Pub. , London, 1997, p.219.

are the products of human imagination and choice, and we can trace the course of their development beyond the horizon of recorded history to a time when our ancestors were wandering the savannah without a consonant to their names, and with a culture little more elaborate than that of existing chimpanzee groups.

Yet, we can be sure, in evolutionary terms, that these hominids, from whom we are descended, possessed a phylogenetically-given nature, just as do chimpanzees.

From which it follows that all human cultures, past and present, are the historical creations of human populations, all of whose members possessed, as they still possess, a phylogenetically-given primate nature; and further, that this primate nature, which is principally programmed in the limbic systems of their palaeomammalian brains, is ever present, in all human groups, coexisting with their cultural institutions.<sup>62</sup>

Mason and Lowe confirmed pebble tools gained by C. K. Brain in 1954 in the lowest australopithecine layer at Makapansgat. Brain was working at that time with Raymond Dart. Later these pebbles were doubted as tools by other scientists. However, Dart and his colleagues considered the surfaces of the pebbles had been worked on for use by the australopithecines. Recent discoveries in Gona, Ethiopia, of worked pebble tools dating to 2.5 million years ago are significant. Might the findings of Mason and Lowe at Makapansgat be reconsidered and found to be correct, this site of 3 million years old might prove most important as it is well out of the range in time of more advanced human types known to have made stone tools. The scientists working at Gona noted:

The Oldowan Stone tool industry was named for 1.8-million-year-old (Myr) artefacts found near the bottom of Olduvai Gorge, Tanzania. Subsequent archaeological research in the Ormo (Ethiopia) and Turkana (Kenya) also yielded stone tools dated to 2.3 Myr. Palaeoanthropological investigations in the Hadar region of the Awash Valley of Ethiopia, revealed Oldowan assemblages in the adjacent Gona River drainage. We conducted field work in the Gona study area of Ethiopia between 1992 and 1994 which resulted in additional archaeological discoveries as well as radio-isotopic age control and a magnetic polarity stratigraphy of the Gona sequence. These occurrences are now securely dated between 2.6-2.5 Myr. The stone tools are thus the oldest known artefacts from anywhere in the world. The artefacts show surprisingly sophisticated control of stone fracture mechanics, equivalent to much younger Oldowan assemblages of Early Pleistocene age. This indicates an unexpectedly long period of technological stasis in the Oldowan...There is, as yet, no evidence of stone artefacts in sediments older than 2.6 Myr within the Gona. Two contemporaneous hominid species *Homo* and *A. aethiopicus* are known elsewhere in eastern Africa from deposits that are comparable in age with the Gona. However, no hominid specimens have yet been found associated with Late Pliocene stone tools.<sup>63</sup>

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62 Derek Freeman, *Paradigms in Collision*, The Australian National University, 1992, p. 18.

63 S. Semaw, P. Renne, J. W. K. Harris, C. S. Feibel, R. L. Bernor, N. Fesseha & K. Mowbray, '2.5-million-year-old stone tools from Gona, Ethiopia', *Nature*, vol. 385, Jan. 1997, pp. 333, 336.

It was in 1963 that a reply Dart had written to the authors of an article in the *American Medical Journal* would within in a few years change the whole mode of his retirement.

The Institutes for the Achievement of Human Potential were set up under the inspiration of Dr Temple Fay, a neurosurgeon, and evolutionary neurologist. From 1945 Drs Glen Doman (physiologist) and Carl Delacato (psychologist) with a small group of physical therapists and physicians in Philadelphia had struggled to develop a new, a neurological approach to treat brain injured children by stimulating brain cells through moving limbs which they themselves could not move, using the same stages of movement normal children used. Dart wrote by hand to them:

I hope your method of treatment of brain injured children is as good as it seems to be. But, it is your scale of stages of the normal brain's development that intrigues me. For, the thirteen levels of mobility that you use as a test of success are precisely the successive stages by which mankind rose, from four-footed animals, to become a unique, walking biped with hands freed to manipulate tools and a brain capable of inventing them. The development of the individual does indeed recapitulate the evolution of the species. More power to you and to your work.<sup>64</sup>

In the years to follow Dart became their guidepost for advice, urging them to stand firm against their critics. After visiting Indian villages in South America to study the children's upbringing, they visited Bushman tribes in the Kalahari Desert and other African tribes on similar missions in 1966 and met Dart personally. So impressed had the International Forum of Neurological Organization been with Dart's interest and advice, it awarded Dart the year before in his absence a Statuette with citation. (fig. 117). Drs Doman and Delacato now presented it to him in person on 1 August 1966 at a gathering of his friends and colleagues at the Medical School. Over memorable evenings of discussions and specimen study, Dart's boundless energy astounded them, also his, 'incisive wit and refreshing clarity as he reached again and again into his vast fund of experience to cast a clear light on whatever problem we discussed'.<sup>65</sup> By some means they must get this man to their Institutes for the Achievement of Human Potential in

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64 Glen Doman, in Dart with Craig, *Adventures with the Missing Link*, Introduction, pp. xvii-xx.

65 *ibid.*

Philadelphia so that professional people could hear and benefit from his methods. On return to the United States the United Steel Workers of America made contribution towards this purpose.

A cable from Philadelphia interrupted Marjorie and Raymond's Portuguese East African holiday with a proposal of the work he might undertake. Replying that this was impossible he recorded:

the things they wished me to think about, I'd given up thirty years earlier. I was flabbergasted and repelled at the enormity of being asked to do this sort of thing—my whole orientation now was fossils. Further the situation was complicated by the fact that our son, Galen was hospitalized. Marjorie too was earning an honest penny for her retired husband as publications officer with the Wits University Press.<sup>66</sup>

They considered the offer long and hard. What tilted their acceptance though only on special terms, was the fact that it might help their own son Galen as well as so many others. Because of Galen, special arrangements would have to be made for them to be in South Africa for three months, followed by three months in the USA—in all six months of the year in each country. Late in 1966, eight years after his 'retirement', Raymond Dart became the first occupant of the United Steel Workers Chair of Anthropology at the Avery Postgraduate Institute of the Institutes for the Achievement of Human Potential. Dart pointed out it was 'the only appointment of an academic for research and investigation that has been supported by a labour Union—so one feels privileged'. He found a wonderful spirit among the leaders. They invited him to become a member of the Union, from which time Dart proudly wore his membership badge in his suit lapel.<sup>67</sup> Over the next twenty years Marjorie and Raymond gave their invaluable services lecturing and advising on brain damage in children and steel workers, Dart contributing from his vast knowledge, accumulated over a lifetime, of brain development both in animals and man. According to Dr Glen Doman the team achieved activation of brain cells by means of a broad variety of auditory, visual, tactile, gustatory and olfactory stimuli, intensive and purposeful muscular exercise; each nervous system was provided with the greatest possible amount of sensory input, to cope with lost function of other cells Phylogenetical movements, the rolling action of pisces (fish), the crocodilian gait, (reptilian), the brachiation swinging movement of the apes

66 Dart interview by F. Wheelhouse, Johannesburg, 1 Mar. 1973.

67 *ibid.*

(primates) proved highly beneficial. The now famous Alexander Technique, the brainchild of Australian F. Matthias Alexander; he comprehended the significance of our crucial human achievement of upright posture and invented a series of corrective exercises to improve posture. According to Dr Glen Doman, thousands of children and adults were treated, parents learning the skills of exercise application themselves. Remarkable results were achieved. Children who would have been normally banished for life in hospital, responded, many from aged two, became capable of reading and understanding, even reading in French. Their skills with musical instruments, dancing, and in academic achievements, also became legendary.<sup>68</sup> Raymond Dart would also establish a museum with his and other famous specimens of early man to which the public and school children came and to hear him illuminate the facts about them. (figs.118-120).

Since his retirement in 1958 Dart had in 1962 led an archaeological tour to Israel and Greece, taking his son with him. In 1965 he attended a testimonial dinner and presentation by Leighton Wilkie in Chicago and visited the Hebrew University and fossil sites in Israel; Ethiopia in 1971, (figs.121-123). He also attended the Inqua Conference at Boulder, Colorado, visited the Primate centre in Guernsey and at Madison and Seattle; Beaverton; Oregon, Davis, California and at Covington, Louisiana, USA; and was also engaged in a film on Makapansgat. On 28 February 1964, Dart received an honorary Doctorate of Science Degree from the University of the Witwatersrand. In 1968, on the occasion of his 75th birthday, the *South African Journal of Science* devoted its February issue in his honour with papers from colleagues worldwide, and republished in it Dart's famous *Nature* paper of 7 February 1925. In 1968 the Darts were in Spain, Austria, Portugal, Czechoslovakia, Romania, Hungary, Israel, Teheran and Yerkes Regional Primate Centre, Atlanta, Georgia, while in 1969 they were in Paris and London; tragically that year their daughter, Diana, lost her baby in an accident. In 1970 they were in Mallorca and Norway and in December 1971 at the Seventh Pan-African Congress on Prehistory at Addis Ababa, Ethiopia and they visited the Canary Islands. (figs.121-123). Throughout their years of travel to and from America and to

68 Pearl F. LeWinn, 'Raymond A. Dart, M.D.', *The Institutes In Report*, vol. 1, no. 1, May 1973, pp. 1-5; Janet Gauger, 'Raymond Arthur Dart, M.D', *The Institutes In Report*, vol. 16, no. 4, pp. 7-11; Glen Doman letter to F. Wheelhouse 16 Aug. 1993,

handle their vast programme, Marjorie and Raymond never failed to include along the way visiting zoos, primate research centres, anthropology congresses, often lecturing, taking holidays at far flung places, the Inca Ruins and Lake Titicaca, Rio in South America, Ireland, the Continent, northern Africa, Australia, New Zealand also traversing north America several times. The Darts enjoyed all these activities. All this was in addition to Dart's supervision and engagement with several research programmes in South Africa.<sup>69</sup> (figs. 121-123).

In 1972 back in Sydney, Dart was one of the participating speakers at the University of Sydney for the Sir Grafton Elliot Smith Centenary Commemoration. He also participated in ANZAAS (Australian and New Zealand Association for the Advancement of Science), and visited his relatives in Sydney and Queensland.<sup>70</sup> (fig. 123). In 1973 on his 80th birthday Dart was presented with the Silver Medal for services to the Medical Sciences. In 1974, the 50th Anniversary of the discovery of the Missing Link by Professor Dart in 1924 was celebrated in Johannesburg, the Museum of Man and Science commemorating the event by its publication, *Raymond A. Dart: Taung 1924-1974*. He was then 81 years old. Dart's original paper on the Taung skull had been reproduced some years previously in a collection of writings that changed the world's thinking. It appeared alongside the works of geniuses such as Newton, Darwin and Einstein. In 1981, aged 88 years old he was to make a further trip to lecture at the University of New South Wales. Tragically vision in his remaining good eye also became impaired similarly to that of his other eye some years previously, leaving him only with peripheral vision in both eyes. Nevertheless his work continued with the aid of a tape-recorder and a typewriter. Professor Phillip V. Tobias lectured in Dart's stead at Sydney on a topic close to his mentor's heart namely, on posture, poise and skill of humans.<sup>71</sup>

One of the most satisfying times in Dart's life was when he was received in April 1984 at the 'Ancestors: Four Million Years of Humanity' Exhibition at the American Museum of Natural History, New York, as the

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69 Shellshear Museum Archives, University of Sydney, Dart letters to N. W. G. Macintosh, Sydney 3 Jan. 1962 to 31-Dec. 1973.

70 University of Sydney, Programme, Commemorative Addresses, 'Sir Grafton Elliot Smith: the man and his work', 30 Oct 1972.

71 P. V. Tobias, *Man: The Tottering Biped: The Evolution of his Posture, Poise and Skill*, Committee in Postgraduate Medical Education, The University of New South Wales, Kensington, Sydney, 1982, pp. 1-74.



elder statesman in the field of palaeontology, among a star-studded group of international colleagues; his Taung child skull taking pride of place amongst the 43 other priceless human and ape fossils.

Yet another unforgettable memory for Raymond Dart was in 1985, the celebration of his 1924 discovery shared with hundreds of international delegates who attended the Taung Diamond Jubilee International Symposium to honour him at the University of the Witwatersrand where he still served as an Emeritus Professor. Among those honoured also was Alun R. Hughes after thirty-eight years of service in the field and laboratory to Raymond Dart and Phillip Tobias at Wits Anatomy Department. He had an honorary degree conferred on him. P. V. Tobias described him as 'the veteran excavator of ape-men and many-sided contributor to fossil hominid studies'.<sup>72</sup> The delegates were treated from 27 January to 4 February to lectures and functions as well at the University of Bophuthatswana, Mmabatho, excursions to the fossil caves at Sterkfontein, Kromdraai, Swartkrans, Makapansgat, the famous Taung site, stone tool and Iron Age sites, viewing of specimens at the Bernard Price Institute for Palaeontological Research, and at the Transvaal Museum, Pretoria also at the Medical School. (Figs. 124-131). To cap off this momentous event, delegates enjoyed a party celebration for Raymond Dart's 92nd birthday in his presence.<sup>73</sup>

Raymond Dart lived to 22 November 1988, aged 95 years, Marjorie died in 1990—their wish being that their ashes be scattered in their beloved Makapansgat Valley where together they had found such great happiness.<sup>74</sup>

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72 Tobias, (ed) *Hominid Evolution: Past, Present and Future*, Alan R. Liss, Inc., New York, 1985, p.xxvii.

73 F. Wheelhouse, delegate to the Taung Diamond Jubilee International Symposium, 27 Jan-4 Feb. 1985.

74 P.V. Tobias letter to Frances Wheelhouse, 14 January 1991.

## CHAPTER 13

### YEARS OF SATISFACTION : INESTIMABLE CONTRIBUTIONS

Brief mention has been made above of Dart's impact on students and staff (see ch. 4). It seems appropriate here to echo the sentiments of a few other students and staff spanning intervals over his entire teaching years—1923-1959. Firstly the appraisal of Dr J. H. S. Gear:

I was one of Professor Dart's first students in South Africa. I have always regarded this as one of my greatest privileges. There were few students in those days and so we got to know our professors well. Professor Dart inspired us with his great enthusiasm and single-minded devotion and by his great appreciation of the opportunities in this fair land of ours.<sup>1</sup>

Gear would never forget how Dart's great trust in him as a student to study and describe the baboon skulls from Taung enabled him to reveal them as smaller and more primitive, ancestral to modern baboons and in so doing delineate also for the Taung skull a much greater age than previously thought. Phillip V. Tobias, one of the 'greats' in a long line of Dart's students valued his privilege of serving under him from 1944, as a student, demonstrator, lecturer and senior lecturer for many years, in time, his successor. (fig. 83). He always marvelled, 'At the capacity of Dart's mind to master the personality traits and feel for the problems of every one of his staff. Considering his staff of fulltime personnel, and academic technical and administration ran to 70-80 people, Tobias considered this no mean feat.'<sup>2</sup> Tobias related:

He would never fail to arouse and maintain enthusiasm, whether he was expounding upon the morphology of the nervous system to a class of Anatomy undergraduates, or discussing with a junior technical assistant the problems of a soldering iron! After an hour or two, he would leave that young technician—no less than the class of students—with the feeling that his wielding of the iron was the most important, the most fascinating job in the world, even if it did revolve

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- 1 J. H. S. Gear, Vote of Thanks pp. 35-36, to Profesor Dart's Presidential Address, 'Australopithecine Acceptance and Some of its Effects', *Annual Proceedings Associated Scientific and Technical Societies of South Africa 1963-64*, Cape Town, publ. Sept. 1965. pp.15-34.
  - 2 P. V. Tobias, 'Raymond Arthur Dart: Biographical Sketch and Appreciation', the *Leech*, vol. XXV111 (3,4,5), Nov. 1958, p. 92.

around a Bunsen flame!<sup>3</sup>

For Tobias, Raymond Dart was an inspirational figure from whom one learned principles and broad ideas, a quite extraordinary man—the most extraordinary man he had ever met, ‘flamboyant, a renaissance man, the kind one doesn’t meet very often in life’. Dart’s stimulating spirit, Tobias considered had had the most memorable impact on those about him. He would remember his, ‘Dynamic character, his unflinching forthrightness...his infectious confidence, his encouragement of criticism, even of himself and his department, his keen sense of humour and his ability “to take it with a smile”.’ Tobias affirmed his lecturing skills, his ‘ability to utilize personality traits of his staff and students to master their problems, to inculcate into them lingual and verbal skills’.<sup>4</sup> Dart was renowned for skill in conveying the significance of skill itself. His colleagues found him both stimulating and provocative, an invaluable catalyst in the turbulent field of palaeontology—a field characterised by strong emotions and a good deal of personal animosity. One special talent, was his ability to achieve fruitful collaboration among colleagues on important scientific projects.<sup>5</sup> His unexpected forays into the Dissection Hall, whereupon the noise level would immediately cease, were legendary, as were his instant lectures on skill or for some students a reminder of their lack of it, and likewise of poise. One student Tobias remembers as being hunched over her cadaver, like the letter ‘C’ when Dart approached her. He ran his knuckles up her spine, gaining her immediate response to an upright position. That student, Priscilla Kincaid-Smith, became a major international authority on the histopathology of the kidney, was the first woman professor at the University of Melbourne, and also an advisor to the World Health Organisation. These forays into the Dissection Hall Tobias would later learn provided release of Dart’s tensions through his acting talents.<sup>6</sup> There is no doubt Dart’s influence inspired students to encompass other important avenues. Tobias, for example, became president of the non-racial students Union of South Africa, which started the first campaign against apartheid in South Africa in 1948, efforts

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3 *ibid.*

4 *ibid.*

5 Frances Wheelhouse, *Raymond Arthur Dart: A Pictorial Profile: Professor Dart's Discovery of 'The Missing Link'*, Transpareon Press, Sydney, 1984, pp. 18-19.

6 Tobias, Transcript of video interview by Jim Leigh of P. V. Tobias, L. Geffen and F. Wheelhouse at Ipswich Grammar School, 24 Oct. 1992; Tobias, *Dart, Taung and the 'Missing Link'*, p. 12.

in this respect which he continued thereafter.<sup>7</sup> Of working with the great mix of races and ethnic groups Dart himself related, 'One of the reasons I have been successful is that I've never had racial antagonism'.<sup>8</sup> Tobias recalled that students would remember Dart's works, and how much they owed to him for the successful beginnings of the Students' Medical Council; the *Leech*; the Nurses' courses; the Witwatersrand Medical Library; the student-run Refectory; the various cultural societies; the Medical School Players; the Occupational Therapy Society and Physiotherapy.<sup>9</sup>

From the beginning he encouraged women to enrol for study, and over time made sure to engage good numbers of them on his staff. (fig. 106). He held the view that the role of women in society was of the utmost importance. He considered that women were most necessary to educate. At that time they were considered primarily as future mothers and teachers.<sup>10</sup>

Surgeon Maurice (Toby) Arnold, (fig. 106), who trained under Dart in anatomy and physiology, and then gained the Edinburgh Fellowship and the London Primary, returned to South Africa in 1946 from service with the Union Defence Forces in Egypt. From this time he served with Professor Dart, initially in an honorary capacity for a few years before being granted permanent lectureship in anatomy, a position which he filled until 1960. Highly respectful of Dart's scientific achievements, he, as did many other staff members would also become most respectful of his great understanding of humanity, his methods of improving race-relationships, particularly for his students which he achieved in unusual ways; one far-reaching example of which is shown in the area of cadaver dissection work. He put a great deal of work into selection of table groups, restricting the number of students to six per dissecting table. In his scheme he considered no less than twenty-two variables, which task Maurice Arnold considered almost impossible; though which Dart effectively achieved with the aid of pieces of coloured cardboard. On each of these the following information was printed: name, age, sex, course, race, home language, religion, name of preferred partner, any degrees held and whether willing to work with other races at the same table. If an Afrikaner objected to working with Bantu, he

7 Tobias, interview by Margaret Throsby, ABC Radio 2 BL, Sydney, 23 Mar. 1992.

8 Dart, interview by F. Wheelhouse, Johannesburg, 7 Feb. 1973.

9 Tobias, 'Raymond Arthur Dart: Biographical Sketch and Appreciation', the *Leech*, vol.XXV111 (3,4,5), Nov. 1958, p. 92.

10 R. A. Dart interview by F. Wheelhouse, Johannesburg, 1 Mar. 1973.

respected his objection, but put a Bantu at each table around so that the Afrikaner would come into proximity with them and perhaps come to realise that they too were only human. If the preferred partner was of different scholastic ability, he did not bring them together, but saw that they were at tables near each other. Students of the same religion were paired if possible. He divided student groups into mature (over twenty-five years) and those not so mature. One female student was put at each table to raise the tone. Repeat students occupied separate tables. 'Horse-play with bones or other human material was forbidden; Dart insisted on showing respect for human material, which if not adhered to, a student might face expulsion'.<sup>11</sup>

Maurice Arnold never ceased to be amazed at Dart's understanding of the human body and his innovative ideas and execution of some of these in regard to student welfare and health. Remaining long vivid in his mind was Dart's treatment of a student with a paralysed arm, the result of spastic paralysis with which he had been born. Witnessing Dart's exercises of this student in his office, Arnold at first considered these bizarre; resembling movements akin to primitive amphibian or fish by rolling from side to side, and during which action Dart called for a deeply enforced yawn from the student, at which time he would roll and smack the paralysed arm against the carpet on the floor. Over time Arnold could not believe the transformation of this withered arm to a well-developed forearm bulging with muscles and twice the size of his own left forearm. Dart enlightened Arnold that the lad's main pathway from the brain had been destroyed, but he believed there to be another more primitive pathway still intact from the brain, which if activated, the young man's arm might regain its power.<sup>12</sup>

Laurie Geffen had both Tobias and Dart as his lecturers in the 1950s. Later as Dean of Medicine, University of Queensland, he remembers Dart:

As a great teacher who imbued all who were privileged to be his pupils with a love of science and a suspicion of received truth...a larger than life figure...with piercing blue eyes and a resonant voice which at times could strike fear into the hearts of his pupils...his kindness to students during their seminar presentation; though a

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11 M. Arnold letter to F. Wheelhouse, 9 Oct. 1983.

12 M. Arnold interview by F. Wheelhouse, Sydney, 1 June 1973.

hard task master if work was not adequately prepared.<sup>13</sup>

Two members of the technical staff who treasure their shared long association with Raymond Dart since the mid 1940s, James Kitching and Brian Maguire, (figs. 99,103,107,109), briefly relate some encounters with him. James Kitching:

In any of your work Professor Dart will give you all the encouragement he can because it hasn't been done before in this Institute, and if it weren't for him hammering away at you to try it, we wouldn't find these things out. The wonderful thing about Professor Dart is that if anyone comes to him with an idea he will listen. If you work with a man like this, how can you fail, he inspires you. The inspiration is always there even if he comes and gives you a push and says, "Why didn't you put that down on paper, why haven't you got it in your notes?"

It has been a joy all my life to have been associated with a man like that—whether it was on my reptile work, (which was the first interest, my first love due to Dr Broom who I knew since I was a kid of seven in the Karroo) or my exhilarating experimental work with Professor Dart or whatever work I was doing for him.<sup>14</sup>

James Kitching is one of those rare, naturally-gifted individuals, who applied himself first as an amateur in anthropology, and through his brilliant and uncanny discoveries and interpretations and hard work, became an expert in his field. Always appreciative of the tremendous aid and encouragement given him by Dr Broom initially, and then by Professor Dart while field officer with the Bernard Price Institute for Palaeontological Research, from this position to that ultimately of its Director, he undertook and achieved on 14 April 1973 his PhD Degree. His thesis was based on his twenty-five years first hand observation of the occurrence of fossils in the field and a comprehensive survey of the stratigraphy and vertebrate palaeontology of the Beaufort Series of sedimentary fossil-bearing rocks containing reptile and mammal-like reptiles, of the Cape, Free State and Natal. In this area he is regarded as a world authority. He attained further fame by his discoveries of rare fossils in the Antarctic and lecturing on his work overseas. Because of his background of brilliant achievements, the University of the Witwatersrand permitted him the unusual path of enrolling for his higher degree with only his matriculation. Raymond and Marjorie

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13 Laurie Geffen, 'The Hidden Hand in the Evolution of the Human Brain: a Tribute to Raymond Dart 1893-1988', Public Address, Brisbane, 23 Oct. 1991; L. Geffen, interview by F. Wheelhouse, Ipswich Grammar School, 24 Oct. 1992.

14 James Kitching interview by F. Wheelhouse, Johannesburg, 22 Mar. 1973.

Dart considered his achievements most remarkable, more especially that as an Afrikaner, English was a foreign language to him.<sup>15</sup>

Brian Maguire over the years experienced the many facets of Dart's rich personality. He knew times when like others, he drew his scorn, his praise and his humanity:

If Professor Dart needed any of these reasons to bring out his associates' talents he would readily use them. The man's presence is something to experience—just to know he's somewhere around gives one a feeling of confidence. Both scholar and humanitarian, in character stature he is a giant—interested, spontaneous and helpful.<sup>16</sup>

### **Inestimable Contributions:**

Since Raymond Dart's pioneering discovery in 1924 of the Taung child, *Australopithecus africanus* and Robert Broom's discoveries from 1936 of adults of this and other species and Dart's further location of them at Makapansgat from the 1940s, numerous other specimens of Australopithecines have been recovered throughout Africa—about seven species are considered to have been identified, the Sterkfontein Valley in South Africa perhaps the richest lode in quantity and speciation. Today scientists generally agree the Australopithecines existed from about 4 million years ago and encompass two major groups or genera of hominids. There is our own genus *Homo* which is thought to have appeared about two and a half million years ago and which includes at least three species, *Homo habilis*, *Homo erectus* and *Homo sapiens*.<sup>17</sup>

Opinions of anthropologists differ on the limbs and branches of the human family tree spanning nearly five million years. The reported views of two renowned scientists in the field demonstrate this. Phillip Tobias of the University of the Witwatersrand in South Africa, 'views *Homo* as a fairly simple genus descended from *Australopithecus africanus* two to three million years ago'. Bernard Wood, of the University of Liverpool, England, 'views

15 Convocation Commentary, June 1973, organ of the University of the Witwatersrand.

16 Brian Maguire interview by F. Wheelhouse, Makapansgat Valley, South Africa, 24 Mar. 1973.

17 Rick Gore, 'The Dawn of Humans: The First Steps', *National Geographic*, vol. 191, no. 2, Feb. 1997, p. 77.

*Homo* as a more complex genus with no clear path of descent from the australopithecines. They agree that robust australopithecines occupy a separate lineage, that went extinct about one million years ago—but disagree on how many robust species existed'.<sup>18</sup>

In order of the oldest Australopithecines to the youngest working into the *Homo* genus, the list is thought to read as follows. However in 1994 Tim White and colleagues listed their 4 million-year-old discovery at Aramis in Ethiopia as *Australopithecus ramidus*. He changed the name shortly afterwards to *Ardipithecus ramidus*.<sup>19</sup>

*Australopithecus anamensis*, discovered by Meave Leakey and team in the early 1990s at Kanapoi near Lake Turkana, Kenya, also at Allia Bay - (shores of Lake Turkana), the teeth and jaw and lower leg bones mark it as hominid. Age 4 to 3.8 million years old.

*Australopithecus bahrelghazali*, jaws and teeth found at Chad 1500 miles west of the East African Rift - age 3.5 to 3 million years old.

*Australopithecus afarensis*, Hadar, Ethiopia, found in 1974 by D. Johanson and team - 3.9 to 3 million years old. Some anthropologists consider differences do not warrant a new species from *afarensis*.

*Australopithecus africanus*, first juvenile discovered by Raymond Dart in 1924, Taung, South Africa, first adult found in 1936 and later other species by Robert Broom, Sterkfontein, South Africa and by Dart in the 1940s at Makapansgat, South Africa, also in 1994 'Little Foot', by P. V. Tobias and R. J. Clarke at Sterkfontein, 3.5 to 2.3 million years old. [Laetoli (Tanzania) footprints discovered in 1976 by Mary Leakey].

*Australopithecus aethiopicus*, Eastern Africa, robust type, massive chewing muscles anchored to a prominent bony crest (sagittal) along the top of the skull; 2 to 1.1 million years ago. (Some researchers combine this specimen with *Australopithecus boisei*).

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18 Rick Gore, 'The Dawn of Humans: The First Steps', *National Geographic*, vol. 191, no. 2, Feb. 1997, p. 85.

19 Roger Lewin, 'Bones of Contention', *New Scientist*, vol. 148, no. 2002, 4 Nov. 1995, pp. 14-15.



*Australopithecus boisei*, Olduvai Gorge found by Mary Leakey in 1959, (first named *Zinjanthropus*); others at Lake Turkana; 2.6 to 1 million years old; sagittal crest along top of skull.

*Australopithecus robustus*, first discovered by Robert Broom, Kromdraai, South Africa in 1938; 2 to 1.2 million years old. Eastern African forms from 2.5 million years old. Includes several robust species; some scientists think some are distinct enough to be placed in a separate genus *Paranthropus*.<sup>20</sup>

The genus *Homo* is represented by the following specimens:

*Homo habilis* from Olduvai and Lake Turkana; first discovered by Louis and Mary Leakey in 1959-63; 1.9-1.5 million years; time range includes specimens identified as *H. rudolfensis*. The species name of *H. habilis* was suggested by Raymond Dart who designated it to be an "able (or handy) man". William Howells states "clever with hands". Louis Leakey, Phillip Tobias and John Napier named it thus in 1964.

*Homo erectus*, first discovered by Eugene Dubois in the 1890s in Java, later by Davidson Black in China, 1920s; first found in South Africa by John Robinson at Swartkrans in 1949 and named by Broom and Robinson as *Telanthropus capensis*; transferred in 1961 by Robinson to *H. erectus*; others found in Europe; time span generally considered 1.6 million to 250 000; others to 1.8 million years old.

Archaic *Homo sapiens*, Africa, Asia and Europe, time span c. 500 000 to 100 000 years. some researches classify as *H. ergaster*; others include these with *Homo erectus*.

Neanderthals: Africa, Europe and Asia from c. 130 000 to 10 000.

*Homo sapiens*: Anatomically modern humans, Africa from c. 125 000 years ago.<sup>21</sup>

20 Rick Gore, 'The Dawn of Humans: The First Steps', *National Geographic*, vol 191, no. 2, Feb. 1997, pp. 77-97; J. Desmond Clark, 'The African Tinder Box : the Spark that Ignited our Cultural Heritage'. in Ch. 8, '*Milestones in Human Evolution*', eds, Alan J. Almquist & Anne Manyak, Waveland Press Inc, Prospect Heights, Illinois, 1993, pp. 167-182.

21 *ibid.*, 'Images of the Past; Dawn of Humans', Supplement, *National Geographic*, vol. 191, no. 2, Feb. 1997; *Encyclopaedia Britannica*, 15th edn. 1994, vol. 18, pp. 817-848; J Desmond Clark, in *Milestones in Human Evolution*, pp. 167-182; C. K. Brain, *The Hunters or the Hunted? An Introduction to African Cave Taphonomy*, The University of Chicago Press, Chicago, 1981, p. 152.

In Raymond Dart's time of discovery of the first *Australopithecus africanus* there were no satisfactory methods of dating, a major factor which played a part in delaying acceptance of it. Today accurate datings are achieved by use of a range of highly scientific techniques. These include Carbon 14, radioactive elements of uranium and thorium, thermoluminescence and electron spin resonance techniques, molecular analysis, geomagnetic reading of rock formations, even decoding of the human genome. More recently remote sensing and resolution of satellite imaging show subsurface topography, while deep coring in lakes provides a record of the history of past vegetation; while deep sea cores provide temperature changes over time. Scientists hope that stable isotopes of carbon and nitrogen, present in fresh bone, if isolated, might give exact information on past human diet.<sup>22</sup>

As scientist J. Desmond Clark points out, 'It is this coordinated teamwork between natural, physical and social scientists and the pooling of results (on, for example, micro-stratigraphic sequences and the identification of taphonomic agencies that accumulate and disperse bones and tools) that have made research into Plio-Pleistocene origins so successful over the last twenty years'. It is in these efforts, that prehistorians are able to build up an increasingly extensive wealth of information on hominid paleo-environments and behaviour.<sup>23</sup>

New discoveries are constantly being made. The question of the evolution of bipedalism was brought into sharp focus in January 1996 with the extraordinary announcement of a recent discovery in Spain of a Miocene ape *Dryopithecus laietanus*. These substantial skeletal remains of a male ape proved it possessed orthograde posture and locomotion 9.5 million years ago. For the researchers this exceptional find provided vital evidence concerning the origins of modern ape skeletal anatomy and locomotion. It was pointed out that apart from the enigmatic ape specimen of *Oreopithecus*, possibly from Africa but mostly found in the coal seams in Italy, 'no fossil evidence has been found documenting hominoid skeletal anatomy and locomotion of modern aspect earlier than the oldest

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22 Alan J. Almquist & Anne Manyak, *Milestones in Human Evolution*, pp. 94-99; Gamiss H. Curtis in the same work, Ch. 4, 'Old Fossils and the Rocks that Dated them: a Personal History on the Union of Geochronology and Palaeoanthropology', pp 101-113.

23 J. Desmond Clark, 'The African Tinder-Box' in *Milestones in Human Evolution*, p. 170.

*Australopithecus*'<sup>24</sup> Even more recently the same scientists have made further studies of *Oreopithecus bambolii*, found four decades ago, and state it was also able to walk upright.<sup>25</sup>

When Raymond Dart made his seminal assessment of the Taung child in 1924, as nothing like it had been previously found there were no informative texts or journals he could consult as are available today. He had to rely on his reflective judgment and intuition, though based on his own knowledge of brain development of both human's and of human's nearest primates, and in this completely new and different specimen accord his determinations of it. He diagnosed in his fossil evidence of brain expansion which had developed beyond the form of an ape's. He considered it had established itself on the threshold of humanity. This was in stark contrast to contemporary accepted concepts that a large brain in humans was considered imperative for the first obvious divergence from the apes. Dart's recognised the small size of this creature's brain with its crucial expansion of certain areas echoed its human affinities.

With other assessments he further challenged accepted opinion of the time in determining the teeth to be humanlike and shocked his peers with his projection of his specimen as an upright walking individual. In doing so he introduced the pattern of mosaic evolution in humans (of some characteristics occurring before others). Against all ridicule of his revelations and dismissal of the African continent's south as a possible cradle of mankind, Dart, over decades never wavered in his original convictions and for which he was finally vindicated.

Dart's deliberations for his Taung skull were ground-breaking. The specimens that had already been unearthed had large brains such as Java Man and Neanderthal Man, could now be seen as evolving later from a type Dart had portrayed. He influenced his colleagues to begin to speculate as to the beginnings of humanity and think about what features were involved, their relationship to other species now that a specimen had been found possessing upright posture and gait, with hands now free—what

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24 Salvador Moyà-Solà & Meike Köhler, 'A *Dryopithecus* skeleton and the origins of great-ape Locomotion', *Nature*, vol. 379, 11 Jan. 1996, pp. 156-159; Peter Andrews & David Pilbeam, 'The nature of the evidence', *Nature*, vol. 379, 11 Jan. 1996, p. 123.

25 In Brief, 'Walk like a...', *New Scientist*, vol. 156, no. 2105, 25 Oct. 1997, p.27.

use these might now be put to—perhaps tool-making and use! His new ideas injected confidence in other workers to look more deeply into how and why species change and what set this creature along the path to humanity. For the first time he had established the guideposts for humanity's birth, and changed world thinking on the matter of human evolution. Raymond Dart's seminal work in this field of palaeoanthropology is paramount in the 20th century. For this he was accorded a position as one of the top twenty international scientists this century whose important discoveries changed people's lives<sup>26</sup>. As Professor Phillip Tobias so aptly pronounced:

Dart's plunge into ancestral waters took the twentieth century to the very fountain head where one could plumb the depths of human genesis...Dart's Taung discovery and what he made of it will be remembered as the most fundamental single breakthrough in the history of palaeo-anthropology. Next to it the labours of all those who have come after him have simply filled out the details of man's tortuous path of development over the last three or four million years.<sup>27</sup>

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26 P. V. Tobias, (ed.) *Hominid Evolution, Past Present and Future*, Alan R. Liss, Inc., New York, 1985, in Introduction, p. xix.

27 P. V. Tobias, *Dart, Taung and the 'Missing Link'*, pp. 48, 56; Tobias, *Man: The Tottering Biped: The Evolution of his Posture, Poise and Skill*, Post Graduate Medical Education, The University of New South Wales, Kensington, 1982, p. 8.

## BIBLIOGRAPHY

- Abbie, A. A., 'The Original Australians', *Leech*, 28: 3,4,5, Nov. 1958, pp. 120-120.
- Abbie, A. A., 'Annual Post Graduate Oration on Sir Grafton Elliot Smith', reprint from *Bulletin of the Post-Graduate Committee in Medicine, Sydney*, 15: 3, June 1959, pp. 101-150.
- Allsopp, Joseph Henry, *A Centenary History of the Ipswich Grammar School, Ipswich*, 1963, pp. 1-139.
- Almquist, Alan J. & Manyak Anne, *Milestones in Human Evolution*, Prospect Heights, 1993, pp. 94-99.
- Andrews, Peter & Pilbeam, David, 'The nature of the evidence', *Nature*, 379: 11 Jan. 1996, p. 123.
- AnthroQuest*, The Newsletter of the L.S.B. Leakey Foundation, 'First Lady of Fossils: Mary Nicol Leakey: 1913-1996', no. 3, Spring 1997, p. 1.
- Ardrey, Robert, *African Genesis: A Personal Investigation into the Animal Origins and Nature of Man*, London, 1961, The Fontana Library, 1972, p. 7.
- Ardrey, Robert, *The Social Contract*, London, Fontana, 1972, pp.1-405.
- Armstrong Sue, 'South Africa—the missing pieces', *New Scientist*, 143: 1933, 9 July 1994, p. 32.
- 'Taung Child "fell from the sky",' *New Scientist*, 147: 1994, 9 Sept. 1995, p. 7.
- Australian Archives, ACT, Canberra, B 2455, Personnel Dossiers for First Australian Imperial Ex-Service Members.
- Barker, Juliet, *The Brontës*, Weidenfeld and Nicholson, London, 1994, pp. 1-1003.
- Beaumont, P. and Dart, R. A., 'Evidence of Iron Ore Mining in Southern Africa in the Middle Stone Age'. *Curr. Anthropol.*, 10: 1 Feb. 1969, pp.127-28.
- Beaumont, P., 'Border Cave—A Progress Report', *S. Afr. J. Sci.*, 69: 1973, pp. 41-46.
- Berry, G. F. 'Nosoko (Swaziland) Expedition', unpubl., 1934, pp. 6.
- Black, H. D., 'Welcome to the Centenary Commemoration', in *Grafton Elliot Smith: The Man and His Work*, Elkin, A. P. and Macintosh, N. W. G., (eds), pp. 5-6, also dust jacket.

- Blenheim Centenary Souvenir Book Committee, *Blenheim State School Centenary 1879-1979 Souvenir Booklet*, Blenheim, 1979, pp. 25.
- Blunt, Michael J. and Morison, Patricia N., *Australian Anatomy in the 1920's*, Sydney, 1983, pp. 1-24.
- Boshier, A. K. 'Mining Genesis', reprint, pp.1-8, *Mining Survey*. Chamber of Mines of South Africa, 1964.
- 'Ancient Mining of Bomvu Ridge'. *Sci. S. Afr.*, May 1965, pp. 317-20.
- Boshier, A.K. and Beaumont, Peter, 'Mining in Southern Africa and the Emergence of Modern Man'. *Optima*, Mar. 1972, pp. 1-12.
- Brain, C. K., Robinson, J.T., Clarke, J.R., Howell, F. Clark, 'New Finds At the Swartkrans Australopithecine Site', *Nature*, 225: 5238, 21 Mar. 1970, pp. 1112-1119.
- Brain, C. K., *The Hunters or the Hunted?: An Introduction to African Cave Taphonomy*, Chicago, 1981, p. 152.
- (ed.), *Swartkrans: A Cave's Chronicle of Early Man*, Pretoria, 1993, pp. 3-4, 17.
- Branagan, David and Holland, Graham, (eds), *Ever Reaping Something New: A Science Centenary*, Sydney, 1985, pp.150, 256.
- Breuil, H. 'Bone and Antler Industry of the Choukoutien *Sinanthropus* site', *Palaeontologia Sinica*, n.s. D.6 1939, pp. 1-105.
- Brink, S. A., unpubl. notes, n.d. pp. 1-34.
- Bishop, W. W. & Clark, J. D., eds., *Background to Evolution in Africa.*, Chicago, 1976. pp. 1-935.
- British Association for the Advancement of Science Report of the Eighty-fourth Meeting Australia 1914, July 28-August 31*, London, 1915, p. 536.
- British Association for the Advancement of Science Report of the Ninety-seventh Meeting, South Africa 1929 - July 22-Aug. 3*, London, 1930, XXXV1, XXXV111, pp. 329,334,368-373, 428.
- Broom, Robert, 'Some Notes on the Taungs Skull, *Nature*, 115: 2894, 18 Apl. 1925, pp. 569-71.— 'Note on the milk dentition of *Australopithecus*', *Proceedings of the Zoological Society of London*, 1929, pp. 85-88.
- 'Further Evidence on the Structure of the South African Pleistocene Anthropoids', *Nature*, 142: 3603, 19 Nov. 1938, p. 897.
- 'More Discoveries of *Australopithecus*', *Nature*, 141, 1938, pp. 82-89.

- 'The Missing Link no Longer Missing', *The Illustrated London News*, 193: p. 310-11.
- Broom, Robert and Schepers, G. W. H., 'The South African Fossil Ape-Men, the Australopithecinae'. *Transvaal Museum, Memoir No 2*. Pretoria, 1946, pp. 1-272.
- Broom, Robert, *Finding the Missing Link*, Watts Co., London, 1st edn. 1950, 2nd edn. 1951, pp.23-27,25-29; 31-32,45, 50-51, 59-60, 64-66, 70-72, 76-79.
- Broom, Robert, with Robinson, J. T. & Schepers, G. W. H., *Sterkfontein Ape-Man: Plesianthropus*, *Transvaal Museum Memoir No. 4*, Pretoria, 1950.
- Broom, N., 'Address on the Opening of the Robert Broom Museum'. *S. Afr. J. Sci.*, 63: 9, 1967, pp. 371-77.
- Burkitt, A.N., *The Medical Journal of Australia*, 29 Dec, 1945, p.512-14.
- Butler, Samuel, *Hudibras* pt. 2 (1664) canto 1, 1. 843.
- Campbell, Bernard G., *Human Evolution—An Introduction to Man's Adaptations*, London, 1971, Chicago, 1973, pp. 425.
- Carlyle-Gall, C., (ed.), *Six Thousand Miles of Sunshine Travel over the South African Railways*, S. A. Railways & Harbours, Johannesburg, 1927, pp. 16, 36, 41.
- Carrington, W. H. M, 'Man's Future as an Individual', London, 1969, pp. 1-12.
- Chardin, Père Teilhard de, *Phenomenon of Man*, London, 1959, pp. 320.
- Chiarelli, B., 'From the Karyotype of the Apes to the Human Karyotype', *S. Afr. J. Sci.*, 64: 2, Feb. 1968, pp. 72-80.
- Cine Nova Productions, Inc., Toronto, Canada, 'Skull Wars', Video, Jan. 1996.
- Clark, F. C., and Coppens Y., 'Deciduous Teeth of Hominidae from the Pliocene/Pleistocene of the Lower Omo Basin, Ethiopia'. *J Hum. Evol.*, 1973, 2, 461-72.
- Clark, J. D., and Cole S., (eds), *Proceedings of the Third Pan-African Congress on Prehistory Livingstone*, 1955, London, pp. 161-71.
- Clark, J.D. and Bishop, W. W. *Background to Evolution in Africa*, Chicago, 1976, pp. 1-935.
- Clark, J.D., 'The African Tinder Box : the Spark that Ignited our Cultural Heritage', Ch. 8, *Milestones in Human Evolution*, eds, Alan J. Almquist & Anne Manyak, Prospect Heights, Illinois, 1993, pp. 167-

182.

- Clark, Wilfrid Le Gros, 'Observations on the anatomy of the Fossil Australopithecinae', *J. Anatomy*, 81: Oct. 1947, pp. 300-33.
- The Antecedents of Man: An Introduction to the Evolution of Primates*, Edinburgh, 1959, pp. 1-373.
- Man-Apes or Ape-Men? : The Story of Discoveries in Africa*, New York, 1967, p. 26.
- Clark, Wilfrid Le Gros, and Campbell, B.G., *The Fossil Evidence for Human Evolution: An Introduction to the Study of Palaeoanthropology*, 3rd edn. 1978, Chicago, pp. 1-232.
- Clarke, James, Obituary, *Saturday Star, Spectrum*, Johannesburg, 26 Nov. 1988, p. 11
- Coaker, Norwood, KC., 'A Review of the Case of Alexander v Cluver, Joki & Clark, *The Commercial Law Reporter: The Business Man's Law*, Johannesburg, 1949, pp. 650-62.
- The Commonwealth of Massachusetts, Marriage Certificate No. 27, 3 Sept., 1921.
- The Coerwull Magazine: A Quarterly Chronicle of Coerwull Academy*, Lithgow, vol. 1, n.s. no. 1, pt 2, 26 Sept., 1895.
- Cooke, H. B. S., in Dart (ed.), *Beyond Antiquity*, pp. 70-72.
- Coppens, Yves, et al., *Earliest Man and Environments in the Lake Rudolf Basin Stratigraphy, Paleoecology, and Evolution*, Chicago, 1976, pp. 1-616.
- Curtis, Garniss H. , 'Old Fossils and the Rocks that Dated them: a Personal History on the Union of Geochronology and Palaeoanthropology' in Ch. 4. *Milestones in Human Evolution*, eds, A.J. Almquist & A. Manyak, Prospect Heights, 1993, pp. 94-99.
- Dart, Eliza Ann, *The Reminiscences of Eliza Ann Dart*, unpubl., Indooropilly, July 1939, pp.1- 68.
- Dart, Harold, *Happenings—Historic, Heroic and Hereditary*, Sydney, 1981, pp.1-176.
- Dart, Marjorie, 'Raymond A. Dart—List of Publications 1920-1967', *S. Afr. J. Sci.*, 68: 2, Feb. 1968, pp. 134-40.
- Dart, R A., 'University Letter', 31 May 1917, *Ipswich Grammar School Magazine*, n.s. 9: 3, June 1917, pp. 41-51.
- Dart, R.A. and Evatt, H. V., 'College Life', *Calendar of St Andrew's College*, 1918, pp. 29-30.



- Dart R. A., 'Bone tools at the Kalkbank Middle Stone age site and the Makapansgat australopithecine locality, Central Transvaal'. (Written with R. J. Mason and J. W. Kitching, *S. Afr. archaeol. Bull.*, 1948, 12: 85-116).
- Darwin, Charles, *The Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, London, 1901, pp. xiii-xxi; pp. 1-432; p. 402.
- Day, M. H. and Scheuer, J. L., 'SKW 14147: A New Hominid Metacarpal from Swartkrans'. *J. Hum. Evol.*, 2, 1973, pp. 429-38.
- Day, M. H., *Guide to Fossil Men: A Handbook of Human Palaeontology*, London, 1965, pp. 1-289.
- De Beer, Sir Gavin, *Some General Biological Principles Illustrated by the Evolution of Man*, Oxford, 1971, pp. 1-16.
- De Villiers, H., 'Sexual Dimorphism of the South African Bantu-speaking Negro', *S. Afr. J. Sci.*, 64: 2, Feb. 1968, pp. 118-24.
- Doman, Glen, Introduction to Dart with Craig, *Adventures with the Missing Link*, pp. xvii-xx.
- Duckworth, W. L. H., 'The Fossil Anthropoid Ape from Taungs', *Nature*, 115: 2885, 14 Feb., 1925, p. 236.
- The Editor, 'News and views of the Editor', *Nature*, 142: 3603, 19 Nov. 1938, p. 508.
- The New Encyclopaedia Britannica*, 15th edn. 1994, 1: pp. 477-78, 616; 2: pp.209, 506-07, 894; 3: p. 894; 5: pp.802, 945; 6: pp.158, 178-79, 312, 750-51, 786; 9: pp. 826, 933, 23; 10: pp. 25, 220,904-05; 12: pp. 352, 466 889-90, 17, p. 816; 18: pp. 817-848; 19: pp. 748-55.
- Elkin, A. P., and N. W. G. Macintosh (eds), *Grafton Elliot Smith : The Man and His Work*, Sydney, 1974, pp. 1-232.
- Elkin, A. P. , 'Obituary', of N.W.G.Macintosh, *The Gazette*, May 1978, pp. 21-22.
- Findlay, G. H., *Dr. Robert Broom F. R. S.* , Cape Town, 1972, p. iv.
- Fischer, Ilse, 'The Published Works of Raymond Arthur Dart', Johannesburg, 1969, pp.1-37.
- Freeman, Derek, *Paradigms in Collision*, Canberra, 1992, p.19.
- 'From the Monkey Stage', *Sydney Morning Herald*, 22 Aug. 1914.
- Galloway, A, *The Skeletal Remains of Bambandyanalo*, Johannesburg, 1959, pp.154.

- Gauger, Janet, 'Raymond Dart M.D.', *The Institutes In Report*, 16: 4, pp. 7-11
- Gear, J. H. S., 'Vote of Thanks, *Annual Proceedings Associated Scientific and Technical Societies of South Africa 1963-64*, Cape Town, Sept. 1965, p.35-36.
- Geffen, Laurie, 'The Hidden Hand in the Evolution of the Human Brain: a Tribute to Raymond Dart 1893-1988', Public Address, Brisbane, 23 Oct. 1991.
- Ghosh, Asok K., 'Problems and Perspectives of Palaeoanthropology in India'. *J. Hum. Evol.*, 2, 1973, pp. 439-47.
- Goodall, Jane, 'Feeding Behaviour of Wild Chimpanzees', *Symposium, Zoological Society*, London 10: 1963; pp. 39-47.
- 'My Life among Wild Chimpanzees', *National Geographic Magazine*, Aug. 1963, pp. 272-308.
- Gore, Rick, 'The Dawn of Humans: The First Steps', *National Geographic*, 191: 2, Feb. 1997, pp. 74-75, 77-79, 85, 95-96.
- 'Images of the Past: Dawn of Humans', Supplement, *National Geographic*, vol. 191, no. 2 Feb. 1997.
- Grande, Nino del, & Dart, R. A., 'Ancient Iron-smelting Cavern at Mumbwa', *Transactions of the Royal Society of South Africa*, XIX, 1V, 1931, pp. 379-427.
- Gregory, Helen, *Vivant Professores: Distinguished Members of the University of Queensland 1910-1940*, St Lucia, 1987, pp. 59-62; 122-26.
- Gregory, W. K., 'The Bearing of Dr Broom's and Dr Dart's Discoveries on the origin of Man', *Annual Proceedings, Association of Scientific and Technical Societies of South Africa*, Johannesburg, May 1939, pp. 25-54.
- Haeckel, E., *The Evolution of Man*, London, 1918, pp. 361.
- Heinz, H. J., 'Conflicts, Tensions and Release of Tension In a Bushman Society', ISMA Papers, No. 23, Mar. 1967, pp. 1-21.
- Hermes, The Magazine of the Undergraduates Association*, University of Sydney, XX 2, Aug. 1914, pp. 56-8.
- Hiernaux, J, Maquet, E. and Buyst, J. de, 'Excavations at Sanga, 1958. A First Millennium Civilization on the Upper Lualaba', *S. Afr. J. Sci.*, 64: 2, Feb. 1968, pp. 113-17.
- Hill, James P., 'J. T. Wilson: A Biographical Sketch of his Career', *J. Anat.*, LXXV1, pt. 1, Oct. 1941, p. 8.

- Hill, W. C. Osman, *Man's Ancestry*, Illinois, 1954, pp.1- 194.
- Holland, Graham and Branagan, David, *Ever Reaping Something New: A Science Centenary*, Sydney, pp. 150, 256.
- Holloway, Ralph L. 'Endocranial Volumes of Early African Hominids, and the Role of the Brain in Human Mosaic Evolution', *J. Hum. Evol*, 2, 1973, pp. 449-59.
- Holthouse, Hector, *An Illustrated History of Queensland*, Adelaide, 1978, pp. 93-4.
- Hooton, Earnest, *Up From The Ape*, New York, 1946, pp. 208, 306-316.
- Howells, William W. *Mankind in the Making*, London, 1960, pp. 216-19.
- 'Taung: A Mirror for American Anthropology', in *Hominid Evolution: Past, Present and Future*, (ed.) P. V. Tobias, Alan R. Liss, Inc., New York, 1985, pp. 19-24.
- Getting Here: The Story of Human Evolution*, Washington, 1993, pp. 82-85, 130-32, 261.
- Igsacta, Ipswich, 1 Ja. 1980, p. 4; 10: July 1989, p.12; 5: Apl. 1984, p. 6.
- The Illustrated London News*, 'Personalities of the Week: People in the Public Eye', 14 Feb., 1925, p. 260.
- Ipswich Grammar School Register 1862-1926, p. 10.
- Ipswich Grammar School Magazine*, 1: 4, Nov. 1909, pp. 12-13; 8: 1, June 1911, pp. 17-18; 6: 2, June 1914, p. 72; n.s. 9: 3, June 1917, pp. 41-51; 9: 6, Dec. 1918, p. 24; n.s 10: 17, June 1925, p. 19.
- Ipswich Grammar School Magazine, Sporting Supplement*, 1963, pp. 31.
- Ipswich Grammar School Magazine, Centenary Issue, 1863-1963*, pp.13, 79.
- Jack, R. Ian, (ed.), *The Andrew's Book*, St Andrew's College, University of Sydney, 1989, p. 53.
- Jacob, Teuku, 'Palaeoanthropological Discoveries in Indonesia with Special Reference to the Finds of the Last Two Decades', *J. Hum. Evol*, 2: 1973, pp. 473-85.
- Keith, Arthur, 'The Piltdown skull and brain cast', *Nature*, 92: 1913, pp, 107-109, 197-99, 292, 345-46.
- Antiquity of Man* London, 1st edn., 1915: 2nd edn., vol. 1. 1925, p. 356.
- 'The New Missing Link', *British Medical Journal*, 14 Feb. 1925, p. 325.

- 'The Fossil Anthropoid Ape from Taungs', *Nature*, 115: 2885, 14 Feb. 1925, pp. 234-35.
- 'The Taungs Skull', *Nature*, 116 2905, 1925, p.11.
- New Discoveries Relating to the Antiquity of Man*, London, 1931, pp 37-116.
- 'Australopithecinae or Dartians', *Nature*, 159: 1937, p. 377.
- 'The Prehistoric People of Palestine', *Nature*, 141: 3564, 19 Feb. 1938, pp. 340-42.
- 'The Piltdown Man Discovery Unveiling of a Monolith Memorial', *Nature*, 142: 3587, 30 July 1938, p. 196.
- letter to Editor, *Nature*, 142: 3579, 30 July 1938, p. 1010.
- 'Australopithecinae or Dartians', *Nature*, 159: 1937, p. 377.
- An Autobiography*, London, 1950, pp1-703; pp. 7-8, 10, 119, 201, 261-62, 286, 289-90, 192,296-99, 323-29, 361, 363, 391-92, 437, 400, 457, 480, 643-45, 654, 691.
- Koenigswald, G.H.R. von, *Meeting Prehistoric Man*, London, 1956, pp. 48-55.
- 'Gigantopithecus and Australopithecus', *Leech*, 28: 3,4,5, Nov. 1958, pp. 101-05.
- Australopithecus, Meganthropus and Ramapithecus*', *J. Hum. Evol.*, 2, 1973, pp. 487-91.
- Kitching, J., *Bone, Tooth and Horn Tools of a Palaeolithic Man: An Account of Osteodontokeratic Discoveries in Pin Hole Cave, Derbyshire*, Manchester University Press, X1V: 1963, pp. 1-55.
- Laidley Baptist Church Centenary Committee, *100 Years of Baptist Witness in Blenheim and Laidley: 1882-1982*, Laidley, 1982, pp. 1-13.
- Lanpo, Jia, *Early Man in China*, Beijing, 1980, pp. 31-33.
- Leakey, L. S. B., *Adam's Ancestors*, London, 1934, p. 221.
- 'Problems Relating to Fossil Man', *Leech*, 28: 3, 4, 5, Nov. 1958, pp. 116-19.
- The Progress and Evolution of Man in Africa*, London, reprinted 1963, pp. 50.
- 'Was *Homo erectus* responsible for the Hand-axe Culture?', *J. Hum. Evol.*, 2, 1973, pp. 493-98.
- Leakey, Mary, 'Stone Artefacts from Swartkrans', *Nature*, 225: 5239, 28

Mar.1970, pp. 1217-1225.

———*Olduvai Gorge*, London, 1979, pp. 1-187.

Lee Win, Pearl F., 'Raymond A. Dart, M.D.', *The Institutes Report*, 1: 2, May 1973, pp. 1-5.

Lewin, Roger, 'Bones of Contention', *New Scientist*, 148: 2992, 4 Nov. 1995, pp. 14-15.

Lucas, Mary Bisset, 'The Complete Opportunist or Professor Raymond Arthur Dart and Physiotherapy in South Africa', *Adler Museum Bulletin*, 19: 3, Dec. 1993, p. 3.

MacCurdy, G. G., 'The Revision of *Eoanthropus dawsoni*', *Science*, 43: pp. 228-31.

Macintosh, Ann, (ed.), *Memoirs of Robert Scot Skirving 1859-1956*, Sydney, 1988, pp. 1-350.

Macintosh, N. W. G., 'The Talgai Cranium: The Value of Archives', *Australian Natural History*, 16: (1968-70), pp. 189-95.

———'Homage to the Memory of Doctor Robert Broom from his Colleagues in many parts of the world, *S. Afr. J. Sci.*, 63: 9, Sept. 1967, p. 368.

McKee, Jeffery K., & Tobias, P. V., 'Taung stratigraphy and taphonomy : preliminary results based on the 1988-93 excavations', *S. Afr. J. Sci.*, 90: 4, Apl. 1993, pp. 233-35.

Mallows, E. W. N., 'Pre-European Settlement Patterns in Africa South of the Sahara, ISMA Paper No. 13, 1963, pp. 37.

Marston, Alvan T., 'Preliminary Note on a new fossil Human Skull from Swanscombe Kent', *Nature*, 138: 3483, 1 Aug. 1936, pp. 200-01.

Mason, R., 'Bone tools at the Kalkbank Middle Stone Age site and the Makapansgat australopithecine locality, Central Transvaal'. *S. Afr. Archaeol. Bull.*, 3: 1958, pp. 85-116.

———*Prehistory of the Transvaal*, Johannesburg, 1969, pp. xix,21, 27-28, 164.

Morison, P., and Blunt, M.J., *Australian Anatomy in the 1920's*, Sydney, 1983, pp. 24.

Morrison, Allan, in ch. 10, Allsopp, J.H., *IGSMCI 1863-1963*, p. 112.

Moyà-Solà, Salvador & Meike Köhler, 'A *Dryopithecus* skeleton and the origins of great-ape Locomotion', *Nature*, 379: 11 Jan. 1996. pp. 156-159.

Murray, Alexander, *The Alexander Murray Papers, 1940-1988*, Urbana. USA.

- Murray, Bruce, *Wits The Early Years: A History of the University of the Witwatersrand Johannesburg And Its Precursors 1896-1939*, Johannesburg, 1982, pp.127, 143, 179-84, 188-90, 245, 250, 302-14, 370-71, 389.
- Oakley, K. P., 'Dating the Stages of Hominoid Evolution', *Leech*, 28: 3,4,5, Nov. 1958, pp. 112-15.
- Man the Tool-maker*, 6th edn. London, 1972, pp1-101.
- Oliver, Roland and Fage, J.D., *A Short History of Africa*, Penguin Books, Harmondsworth, 1962, pp. 170, 188, 193-3.
- Partington, Angela, (ed.) *The Concise Oxford Dictionary of Quotations*, Oxford, 1993, p. 308: 18.
- Pilbeam, David, *The Evolution of Man*, London, 1979, pp. 129, 216.
- Pilbeam, David and Andrews P, 'The nature of the evidence', *Nature*, 379: 11 Jan. 1996, p. 123.
- Phillips, Wilfred, 'Looking Back', in ch. 10, Allsopp, J. H., *IGSMCI 1863-1963*, pp. 114-15.
- The Queensland Naturalist*, 1: Dec. 1913, pp. 264-65.
- Reader, John, *Missing Links The Hunt For Earliest Man*, Boston, 1981 1st American edn. , pp. 4, 33, 41-45, 56-60, 65, 74-75, 87, 91-92, 96-117, 124, 147.
- Rightmire, G. Philip, *The Evolution of Homo Erectus: Comparative Anatomical Studies of an Extinct Human Species*, Cambridge, 1990, pp. 57-58.
- Robinson, J. T., 'The Dentition of the Australopithecinae'. *Transvaal Museum, Memoir No. 9*, Pretoria, 1956, pp. 1-7.
- 'The Sterkfontein Tool-Maker', *Leech*, 28: 3,4,5, Nov. 1958, pp. 94-100.
- Romer, Alfred S., Letters to the Editor, *Science*, LXX1, 1843, 9 May 1930.
- The Royal College of Surgeons, 'Sir Grafton Elliot Centenary Commemoration Programme 30 Oct. 1972', University of Sydney, 1972, pp. 1-4.
- Royal Prince Alfred Hospital 34th Annual Report 1918-1921*, Camperdown, Sydney, 1921, pp. 30-31, 83.
- Rukavina, Kathleen Stevens, *Jungle Pathfinder, Central Africa's Most Fabulous Adventurer*, Exposition Press, New York, 1951, p. 21.
- St Andrew's College Calendar*, University of Sydney, 1915, pp. 6-7; 1916,

pp. 9-11; 1917, p. 12; 1918, p. 41; 16: Nov. 1918, pp.7, 11, 12,14,19, 41.

Scott, William Berryman, *An Introduction to Geology*, New York, 1900.

Seddon, David, 'Culture, Personality and Society in Prehistory', *The Institute for the Study of Man in Africa, Occasional Paper No. 6*, 1969, pp. 63.

Sefton, Ann Jervie, Cheng, Nicholas, Thong, Ian G., (eds), *The Centenary Book of the Sydney University Medical Society*, Sydney, 1992, pp.20-24, 173, 279, 312-315.

Semenov, S. A., *Prehistoric Technology, an Experimental study of the Oldest Tools and Artifacts from traces of Manufacture and Wear*, London, 1964.

Semaw, S, *et al*, '2.5- million-year-old stone tools from Gona, Ethiopia', *Nature*, 385: Jan. 1997, pp. 333, 336.

Shand, R. W., 'Reminiscences by Old Boys', in ch. 10, Allsopp, J. H., *IGSMCI 1863-1963*, p. 111.

Shaw, John, (ed.) *Collins Australian Encyclopedia*, Sydney, 1984, p. 216.

Simons, E. L., 'A Source for Dental Comparison of *Ramapithecus* with *Australopithecus* and *Homo*'. *S. Afr. J. Sci.*, 64: 2, Feb. 1968, pp. 92-112.

Smith, Gordon, 'The Dart Prize', *Ipswich Grammar School Magazine*, 1975, p. 20.

Smith, Grafton Elliot, 'Presidential Address, Anthropology Section, 1912 Dundee Meeting of the British Association for the Advancement of Science', pp.24.

———'The Controversies concerning the interpretation and meaning of the remains of the Dawn Man found near Piltdown', *Nature*, 92: 1913, pp. 267-68, 318-19, 468-69.

———*The Evolution of Man Essays*, Oxford, 1924, pp. 62, 65-69; 71-73.

———'The Fossil Anthropoid Ape from Taungs', *Nature*, 115: 2885, 14 Feb. 1925, p. 235.

———'Australopithecus, the Man-like Ape from Bechuanaland: A Great Discovery Throwing New Light on Human Ancestry', *The Illustrated London News*, 14 Feb. 1925, p. 240.

———'Fossil Men and Apes', *The Nation*, 4 Apr. 1925.

———*The Search for Man's Ancestors*, London, 1931, p. 25-54.

- Smithford, Kay S., correspondence to F. Wheelhouse 27 July 1993 covering personal contact with the Italian Scientific Expedition members from 1930, A. Gatti, Nino del Grande and Raymond Dart.
- Spencer, Frank, *Pittdown: A Scientific Forgery: Based on Research by Ian Langham (1942-1984)*, Oxford, 1990, pp. xxi-xxvi, 54, 67-75, 123-25, 127.
- Stone, Jonathan, in P. V. Tobias's 'The John Irvine Hunter Memorial Lecture for 1992', Preface, p. 5.
- Tattersall, Ian, *The Fossil Trail: How We Know What We Think We Know About Human Evolution*. Oxford, 1995, p. 4.
- Terry, Roy W. *Man in Africa*, Institute for the Study of Man in Africa, 1963, pp. 21.
- *Raymond A Dart: Taung 1924-1974*, The Museum of Man and Science, Johannesburg, Aug., 1974, pp.17-18.
- 'The Mind of Primitive Man', *Daily Telegraph*, Sydney, 22 Aug. 1914.
- Tobias, P. V., 'Raymond Arthur Dart: Biographical Sketch and Appreciation', *Leech*, 28: 3,4,5, Nov. 1958, pp. 85-93.
- (ed.) with Plotkin, Reuben, *Dart Festschrift*, leather bound *The Leech*, vols. XXV111, nos. 3,4,5. Nov. 1958, pp. 155.
- (ed.), A. Galloway's, *The Skeletal Remains of Bambandyanalo*, also 'Some Developments in South African Physical Anthropology 1938-1958', Epilogue to A. Galloway's, *The Skeletal Remains of Bambandyanalo*, Johannesburg, 1959, pp.151, 132-33, 154.
- António de Almeida, 'Bushmen and other Non-Bantu Peoples of Angola', eds, P.V. Tobias and Jack Blacking, *The Institute for the Study of Man in Africa*, 1965, pp. 1-43.
- 'The Centenary of the Birth of the Late Dr Robert Broom, F.R.S., 30 November, 1966', *S. Afr. J. Sci.*, Sept., 1967, 63: 9, pp. 354-56.
- 'Cranial Capacity in Anthropoid Apes, *Australopithecus* and *Homo habilis*, with Comments on Skewed Samples', *S. Afr. J. Sci.*, 64: 2, Feb., 1968, pp. 81-91.
- 'Homage to Emeritus Professor R. A. Dart on his 75th Birthday', *S. Afr. J. Sci.*, 64: 2, Feb. 1968, pp. 42-50.
- 'Man's Past and Future', Institute for the Study of Man in Africa, 1969, pp. 45.
- (ed.) *The Bushmen: San Hunters and Herders of Southern Africa*, Cape Town, 1978, pp. 1-206.



- *Man, The Tottering Biped: The Evolution of his Posture, Poise and Skill*, Committee in Postgraduate Medical Education, The University of New South Wales, Kensington, Sydney, 1982, pp. 74.
- 'The Life and Work of Professor Raymond Dart', Johannesburg, unpubl. address, 22 June 1983, pp. 15-16.
- *Dart, Taung and the 'Missing Link'*, ISMA, Johannesburg, 1984, pp.5, 7-9, 11, 24, 40, 41, 44-45, 48, 56, 67.
- (ed.), *Hominid Evolution: Past Present and Future*, Alan R. Liss, Inc., New York, 1985, in Foreword, p.xix, quoting A. Hammond, (ed.), 'Century of the sciences: 20 discoveries that changed our lives', vol. 5, *Science* 84, 1984, pp. 1-190.
- in *Taung Diamond Jubilee International Symposium*, 'Excursions', Johannesburg, 1985, pp. 6-14; 32-43.
- 'Piltdown An Appraisal of the Case against Sir Arthur Keith. *Curr. Anthropol.*, 33: 3, June 1992, p. 244; pp. 293.
- *The John Irvine Hunter Memorial Lecture for 1992: The Piltdown Hoax and Human Evolution : New Light on th Impact of Sir Arthur Keith, Ian Langham, and Raymond Dart and Australopithecus*, Department of Anatomy, The University of Sydney, 1992, pp. 8-9, 16, 39.
- and Baker, Graham, 'Palaeo-anthropology in South Africa', *S. Afr. J. Sci.*, 90: 4, Apl. 1994, p. 204.
- Trotter, M., Broman, G. E., and Peterson, R. R., 'The Density of Humeri of American Whites and Negroes'. *Leech*, 28: 3,4,5, Nov., 1958, 139-43.
- Trevor, J. C., 'Quantitative Traits of the U. S. Negro Cranium'. *Leech*, 28: 3,4,5, Nov., 1958, pp. 131-38.
- University College, London, Committee Meeting Minute, 250, 29 June 1920; 249G, 7 June 1921; 242J, 4 July 1922.
- University of Queensland Archives, S 8, Printed copies of Senate Minutes, 1910-1921; S157 / 3, Microfilm of Student Cards, pre 1959, Dart, R. A; *The University of Queensland 1910-1922*, Brisbane, 1922, pp. 35-37; *Professors and Lecturers of the University*, 1923, pp. 35-37; S 250, 'Report of the Inaugural Ceremony', Brisbane, 1 June 1911; *The University of Queensland 1910-1935*, Brisbane, 1925.
- The University of Sydney Calendar 1914*, Sydney, 1915, p. 405,464-65
- The University of Sydney Graduation Record Books, 1917, Raymond A. Dart.
- The University of Sydney, J. T. Wilson Family Archives, P 162, series 5,

General Correspondence to colleagues 1890 to 1945.

*The University of Sydney Medical Society Journal*, viii: pt. 2, Oct. 1914, p. 5;  
X: pt 3, Dec. 1915, front cover; n. s., X1: pt. 1, June 1916, p. 165;  
X1: pt. 3, Jan. 1917, p. 103; X11: pt. 1, June 1917, p. 100.

Vicek, E., 'Postcranial Skeleton of a Neandertal Child from Kiik-Koba, U.S.S.R', *J. Hum. Evol.* 2, 1973, pp. 537-44.

Walker, Alan, 'New *Australopithecus* Femora from East Rudolf, Kenya', *J. Hum. Evol.*, 2, 1973, pp. 545-55.

Washburn, Sherwood L., (ed.), *Classification and Human Evolution*, Wenner-Gren Foundation for Anthropological Research, Inc., London 1964, pp. 371.

———'The Evolution Game', *J. Hum. Evol.*, 2, 1973, pp. 557-61.

———'Human Evolution after Raymond Dart', in *Human Evolution Past, Present and Future*, (ed. ) P.V. Tobias, New York, 1985, p. 4.

Weidenreich, Franz, *Apes Giants and Man*, Chicago, 1945, pp. 122.

Weiner, J. S., Oakley, K. P., and Le Gros Clark, W. E., 'The Solution to the Piltdown Problem', *BBMNH(G)*, 2: 1953, pp. 141-46.

———'Further contributions to the solution of the Piltdown Problem', *BBMNH(G)*, 2: (6), 1955, pp. 225-87.

Weiner, J. S., *The Piltdown Forgery*, Chicago, 1955.

Wellington, John H., 'Human Evolution Now: The Significance of South West Africa and Rhodesia', ISMA Paper No. 25, 1967, pp. 22.

Wells, L. H., 'One Hundred Years: Robert Broom 30th November, 1866—6 April, 1951'. *S. Afr. J. Sci.*, 63: 9, Sept., 1967, pp. 357-66.

———'Forward From Taung', *J. Hum. Evol.*, 2, 1973, pp. 563-66.

Wendt, H., *From Ape to Adam*, London, 1971, pp. 287.

Wheelhouse, Frances, unpublished manuscript re: R. A. Dart, p. 17.

———*Raymond Arthur Dart: A Pictorial Profile: Professor Dart's Discovery of 'The Missing Link'*, Sydney, 1983, pp.18-19, 53, 113.

Wilkie, Leighton A., *The Dawn of This Age*. Des Plaines, 1959, pp. 36.

———*Tools Creator of Civilization: The Development of Man as Revealed by the Discoveries of Dr Raymond A. Dart*. Des Plaines, 1965, pp. 60.

Wilson, V. R., 'University Letter', *IGSM*, 8: 2, Dec. 1916, p.34.

Woodward, Arthur Smith, 'The Fossil Anthropoid Ape from Taungs', *Nature* 115: 2885, 14 Feb., 1925, p. 235.

Wrangham, Richard and Peterson, Dale, *Demonic Males: Apes and the Origins of Human Violence*, Bloomsbury Publishing, London, 1996, pp.1-350.

Yakimov, V. P., 'Hominoids, Hominids and the Problem of the Lower Boundary of the Anthropogene', *J. Hum. Evol.*, 2, 1973, pp. 567-77.

## **ARCHIVES**

Australian Archives, Canberra, Commonwealth Series B 2455, Personnel Dossiers for Australian ex-Service Members.

Barlow Rand Archives, Johannesburg.

Institutes for the Achievement of Human Potential, Philadelphia, USA.

Ipswich Grammar School, Queensland.

St. Andrew's College, University of Sydney

Shellshear Museum Archives, Medical School, University of Sydney

*The Illustrated London News*.

University College, London.

University of Queensland, St Lucia, Queensland.

University of Sydney, The J. T. Wilson Family Archives, P. 162.

University of the Witwatersrand, Johannesburg.

Woods Hole Marine Biological Laboratory, Massachusetts, USA.

## **NEWSPAPERS, VIDEOS & TRANSCRIPTS.**

*Arena*, Johannesburg, n.d. Obituaries, 'James Gear', pp. 31-32.

*Cape Times*, Cape Town, 'Professor Dart Upheld: Casts of the Taung Skull Convince Sceptics', 11 June 1925; R. Broom interview, 5 Feb. 1925. p. 9; Valuable link in the chain of outstanding discoveries: Professor Drennan's New Find: Specimen of World's most Primitive Race', 12 Oct. 1929; 3, 30 Aug, 1930; 'The Mind of Primitive Man', 22 Aug. 1914.

*Daily Telegraph*, Sydney,

*Manchester Guardian*, 'Pre-Dawn Man', 20 Apl. 1928.

*Natal Witness*, 21 Aug. 1930.

*Observer*, London, 'The Taungs Skull', 8 Feb. 1925.

*Rand Daily Mail*, Johannesburg, 'The Remote Antiquity of Man in Rhodesia', 22 Sept. 1930; 'Prehistoric Manganese Mines at Broken Hill', 13 Oct. 1930; 'Dr Dora Dart, Honours for Brilliant Medical Graduate; Young Girl Graduates, our Educated Women - Today's Honours', 26 Mar. 1927; 8 June, 10, 24 July 1929; 'Africa the home of the Elephant', 8 Apl. 1929; 'The Taungs skull - Sir A. Keith's View - Not in the Human Line - Agreement with Prof. Dart', 7 Feb. 1925.; 17 Sept. 1929, 7 Sept. 1931.

*Star*, Johannesburg, 'Prehistoric Man in N. Rhodesia', 22 June 1930; 1, 3 Aug. 1928.; 'The Mammoth Hunters of the Vaal: First proof of South African Stone Age Theory', 8 Dec. 1928; 'African Elephants of Remote Ages', 1 Aug. 1929; '3.5 million-year-old bones offer clues : Dramatic fossil find', 28 July 1995, p. 17; 9 Feb. 1966, pp. 10-11; 11 Apl. 1929.

*Sydney Morning Herald*, 31 Dec. 1949; 'From the Monkey Stage', 22 Aug. 1914.

*Sunday Times*, Johannesburg, 'Early Mines in Rhodesia: The Mystery of Chowa', 25 Nov. 1930; Obituary 'Professor James Gear', 24 July 1994.; 'When Mammoths roamed the world: 12 000 year old teeth discovered', 9 Sept. 1928; 'Stone Age South Africans', 4 Nov. 1928.

*Sunday Truth*, Week-end Feature, 'Queenslander Changed Evolution Theories', Sydney, 24 Apl. 1966.

*The Illustrated London News*, 'The Taungs Skull: Professor Dart's Reconstruction at Wembley', 13 June 1925, pp. 1154-55; 'Personalities of the Week: People in the Public Eye', 14 Feb. 1925, p. 260; '*Australopithecus*, the Man-like ape from Bechuanaland: a Great Discovery Throwing New Light on Human Ancestry', 14 Feb. 1925, pp. 200, 238-42.

*The Nation*, 'Fossil Men and Apes', 4 Apr. 1925.

*The Times*, London, 'The Gobi Desert: Former Centre of Teeming Life', 7 June 1926; 14 Feb. 1930; 5 May 1930.

Raymond A. Dart, typescript, unpubl. lecture University of Sydney, 31 Jan. 1950, 'The Inaurural John Irvine Hunter Memorial Oration'.

Commemorative addresses, University of Sydney Programme, 'Sir Grafton Elliot Smith: the man and his work', 30 Oct. 1972.

Ockham's Razor Transcripts. Australian Broadcasting Corporation 4 Aug. 1988.

Jim Leigh, video interview at Ipswich Grammar School, Queensland. of Profesors P. V. Tobias, Laurie Geffen, also F. Wheelhouse, 24 Oct. 1992.

Diana Dart Graham, cassettes and typescripts of interviews by Kay Smithford, Spartanburg, SC. USA, 11 Nov. 1993, 24-28 Jan. 1994.

*Skull Wars - Searching for Lost Worlds. (video documentary)*, Toronto Jan. 1996.

## RAYMOND A. DART—LIST OF PUBLICATIONS 1920-1985

Includes additional matter compiled by  
Marjorie Dart and Frances Wheelhouse.

1920

- 1 A contribution to the morphology of the corpus striatum. *J. Anat.*, 55: 1-26.

1922

- 2 The origin of the motor neuroblasts of the anterior cornu of the neural tube (with Joseph L. Shellshear). *J. Anat.*, 56: 77-95.  
3 Misuse of the term "visceral". *J. Anat.*, 56: 177-78.

1923

- 4 Anderson Stuart: his relation to Medicine and to the Empire. *Nature*, 111: 111.  
5 The brain of the Zeuglodontidae (Cetacea). With a note on the skulls from which the endocranial casts were taken, by W. E. Andrews. *Proc. Zool. Soc. Lond.*, 1923: 615-54.  
6 Boskop remains from the South-east African coast. *Nature*, 112: 623-25.

1924

- 7 Anterior end of the neural tube and the anterior end of the body. *J. Anat.*, 58: 181-205.  
8 Some notes on the double innervation of mesodermal muscle. *J. comp. Anat.*, 36: 441-94.  
9 The Rooiberg cranium. *S. Afr. J. Sci.*, 21: 556-68.  
10 Nickel in ancient bronzes. *Nature*, 113: 888.  
11 Ancient mining industry of Southern Africa. *S. Afr. geog. J.*, 7: 7-13.  
12 Note on Jan the Bushman. *Bantu Stud.*, 2: 107-09.  
13 Double innervation of the striped muscles: a review of its implications. *J. nerv. ment. Dis.*, 60: 553-67.

1925

- 14 *Australopithecus africanus*: the Man-Ape of South Africa. *Nature*, 115: 195-99.  
15 *Australopithecus africanus*: demonstration. *Med. J. S. Afr.*, 20: 183-85.  
16 Historical succession of cultural impacts upon South Africa. *Nature*, 115: 425-29.  
17 Normal and abnormal negroid septa pellucida by C. F. Beyers. And The genesis of the cavum septi pellucidi. *Anat.*, 59: 358-78.  
18 Present position of anthropology in South Africa. *S. Afr. J. Sci.*, 22: 73-80.  
19 Round stone culture of South Africa. *S. Afr. J. Sci.*, 22: 437-40.  
20 Note on Makapansgat: a site of early human occupation. *S. Afr. J. Sci.*, 22: 454.  
21 South African antiquities. *S. Afr. Rlys. Harb. Mag.*, 1925 (Dec): 1172-83.  
22 Law of infiltration in forebrain evolution. *Acta Zool.*, 6: 223-52.

1926

- 23 Taungs and its significance. *Nat. Hist.*, 26: 315-27.  
24 Medical library policy in the Witwatersrand. *Med. J. S. Afr.*, 21: 333-34.  
25 Professor W. Watkins-Pitchford: an appreciation. *Med. J. S. Afr.*, 22: 62-63.  
26 Natives of South Africa: an ethnographic review. *Union of South Africa. Official yearbook*, no. 7, 8 p.  
27 Preliminary report on the stone huts of Vechtkop by C. van Riet Lowe with Plate V. and appendix on the skeletal material by Raymond A. Dart. *J. Roy. anthrop. Inst.*, 57: 217-33.  
28 Post-graduate teaching on the Witwatersrand. *J. Med. Ass. S. Afr.*, 1: 361-63.

1927

29 Mammoths and Man in the Transvaal. *Nature* (Suppl.) 120. (no. 3032): 41-48.

1928

30 Big game of prehistoric Man in South Africa. *S. Afr. Rlys. Harb. Mag.*, 1928 (Dec.): 2010-18.

1929

31 Bronze age in Southern Africa. *Nature*, 123: 495-96.32 South African Negro. *J. comp. Neurol.*, 13: 309-318.33 'Anthropology'. In *South Africa and Science: A handbook*. Johannesburg. S. Afr. Ass. Adv. Sci. ch. 14: 267-286.34 Phallic objects in Southern Africa. *S. Afr. J. Sci.*, 25: 553-62.35 Notes on the Taung skull. *S. Afr. J. Sci.*, 26: 648-58.36 Anatomy of visceroptosis. *J. med. Ass. S. Afr.*, 4: 278-82.37 Mammoths and other fossil elephants of the Vaal and Limpopo watersheds. *S. Afr. J. Sci.*, 26: 698-731.

1930

38 I caratteri dell *Australopithecus africanus*. *Arch. Antrop. Etnol.*, 60/ 61: 1-11.

1931

39 Rock engravings in Southern Africa and some clues to their significance and age. *S. Afr. J. Sci.*, 28: 475-86.40 Ancient iron-smelting cavern at Mumbwa (with Nino del Grande). *Trans. Roy. Soc. S. Afr.*, 19: 379-427.41 Greatness of Congo Belge. *Rhod. min. J.*, 5: 389-93.42 Scientific output of our first decade — a retrospect. *Leech*, 3: 7-9.

1932

43 Place of the collecting zone in the evacuation of wounded. *Nongquai* (Pretoria), 23: 339-40; 342.44 Further data on the origin and phallic character of conical and perforated stones. *S. Afr. J. Sci.*, 29: 731-41.45 Rock engravings in Southern Africa. *Rhod. min. J.*, 6: 195-97.45a Introduction to *A Synopsis of Surgical Anatomy*, by A. Lee McGregor, Bristol, Wright.

1933

46 Fossil man and contemporary faunas in Southern Africa. *Rept. to the Internat. Geol. Congr. U.S.A.*, 16th Session p.1429.47 Studies in native animal husbandry. 8 The domesticated animals of pre-European South Africa. *J. S. Afr. vet. Ass.*, 4: 61-70.

1934

48 Dentition of *Australopithecus africanus*. *Folia anat. Jap.*, 12: 207-21.49 Discovery of a Stone Age manganese mine at Chowa, Northern Rhodesia. *Trans. Roy. Soc. S. Afr.*, 22: 55-70.50 Dual structure of the neopallium: its history and significance. *J. Anat.*, 69: 1-19.51 Significance of skill. *Transv. educ. News*, 30: 39-41; 13-17; 15-17, Oct-Dec.

1935

52 Human monthly cycle and its relation to work. *Leech*, 6: 4-21.53 The content of the First year of study in Medicine. *S. Afr. med. J.* 9: 108-10.

1936

54 Nasal hygiene — a contribution to the prevention and control of nasal infection. *Leech*. 7: 4-18, June.

1937

- 55 Preparation for examinations. *S. Afr. med. J.*, 11: 71-74.
- 56 'Racial origins'. In Ch. I *Bantu-Speaking Tribes of South Africa*, ed. by I. Schapera, London, Routledge, pp. 1-31.
- 57 The hut distribution, genealogy and homogeneity of the /?Auni — ꞤKhomani bushmen. *Bantu Stud.*, 11: 161-74.
- 58 The physical characters of the /?Auni — ꞤKhomani bushmen. *Bantu Stud.*, 11: 175-246. 'The hut distribution, genealogy and homogeneity of the /?Auni — ꞤKhomani bushmen' and 'The physical characters of the /?Auni — ꞤKhomani bushmen'. Reprinted in *Bushmen of the Southern Kalahari*, ed. by . D. Rheinalt Jones and C. M. Doke, Johannesburg, Witwatersrand University Press, 1937, pp. 101-188, + tables and plates not reproduced in *Bantu Stud.* items nos. 57 and 58. This volume is now out of print but copies of *Bantu Stud.* are available from the Witwatersrand University Press.

1938

- 59 Problems in protection of features of anthropological, archaeological and ethnological interest in relation to changes in native sociology and general economics in the Union. *S. Afr. J. Sci.*, 35: 490.
- 60 Fundamental human facial types in Africa. *S. Afr. J. Sci.*, 35: 341-48.

1939

- 61 Hygiene of the upper respiratory tract. *Clin. Med. Surg.*, 46: 163-67.
- 62 A Chinese character as a wall motive in Rhodesia. *S. Afr. J. Sci.*, 36: 474-76.
- 63 Stratigraphy at Rusape and A note on the human skulls from the Comucopia site (written with L. H. Wells). *Trans. Rhod. Sci. Ass.*, 37: 171-80.
- 64 Population fluctuation over 7,000 years in Egypt. *Trans. Roy. Soc. S. Afr.*, 27: 95-145.

1940

- 65 The status of *Australopithecus*. *Amer. J. phys. Anthrop.*, 26: 167-86.
- 66 The legend of Lukas, the "Baboon Boy". *S. Afr. J. Sci.*, 37: 293-95.
- 67 Recent discoveries bearing on human history in Southern Africa. *J. Roy. anthrop. Inst.*, 70: 13-27.

1946

- 68 The postural aspect of malocclusion. *J. dent. Ass. S. Afr.*, 1: 1-21.

1947

- 69 The attainment of poise. *S. Afr. med. J.*, 21: 74-91.
- 70 The first Pan-African Congress in prehistory. *Leech*, 18: 15-16.

1948

- 71 The first human mandible from the Cave of Hearths, Makapansgat. *S. Afr. archaeol. Bull.*, 3: 96-98.
- 71a Promethean *Australopithecus* from Makapansgat valley. *Nature*, 162: 375-76.
- 72 An *Australopithecus* from Central Transvaal. *S. Afr. Sci.*, 1: 200-01.
- 73 The Makapansgat proto-human *Australopithecus prometheus*. *Amer. J. phys. Anthrop.*, n.s. 6: 259-84.
- 74 An adolescent promethean australopithecine mandible from Makapansgat. *S. Afr. Sci.*, 2: 73-75.
- 75 Water cattle. *S. Afr. Sci.*, 2: 81-83.
- 76 'The infancy of *Australopithecus*'. In *Robert Broom Commemorative volume*. Cape Town, Royal Society of South Africa, pp. 143-52.
- 77 The ritual employment of bored stones by Transvaal Bantu tribes. *S. Afr. archaeol. Bull.*, 3 61-66.
- 78 The *Australopithecus* of Makapansgat. *Man*, no. 164, 1948.
- 79 The adolescent mandible of *Australopithecus prometheus*. *Amer. J. phys. Anthrop.*, n.s. 6: 391-412.



1949

- 80 A polished stone pendant from Makapansgat valley. *S. Afr. archaeol. Bull.*, 4: 83-86.
- 81 Adventures with *Australopithecus*. *Rationalist Annual*, 1949: 15-25.
- 82 The bone-bludgeon hunting technique of *Australopithecus*. *S. Afr. Sci.*, 2: 150-52.
- 83 The predatory implemental technique of *Australopithecus*. *Amer. J. phys. Anthrop.*, n.s. 7: 1-38.
- 84 The cranio-facial fragment of *Australopithecus prometheus*. *Amer. J. phy. Anthrop.*, n.s. 7: 187-214.
- 85 The first pelvic bones of *Australopithecus prometheus*. *Amer. J. phys. Anthrop.*, n.s. 7: 255-58.
- 86 Innominate fragments of *Australopithecus prometheus*. *Amer. J. phys. Anthrop.*, n.s. 7: 301-34.
- 87 A second adult palate of *Australopithecus prometheus*. *Amer. J. phys. Anthrop.*, n.s. 7: 335-38.

1950

- 87a The Inaugural John Irvine Hunter Memorial Oration, Wallace Theatre, University of Sydney, 31 Jan. 1950, unpubl. transcript.
- 88 Voluntary musculature in the human body. The double-spiral arrangement. *Brit. J. phy. Med.*, 13: 265-68.
- 89 A note on the limestone caverns of Leba, near Humpata, Angola. *S. Afr. archaeol. Bull.*, 5: 149-51.

1951

- 90 African serological patterns and human migrations. Presidential address. Cape Town. South African Archaeological Society, 1950, 39 p.
- 91 Robert Broom — his life and work. *S. Afr. J. Sci.*, 48: 3-19.
- 91a Foreword to *Botany for Medical Students*, by Edward R. Roux, Cape Town and Johannesburg, Juta, pp [i-iii].

1952

- 92 The Garamantes of Central Sahara. *Afr. Stud.*, 11: 29-34.
- 93 A Hottentot from Hong-Kong: pre-Bantu population exchanges between Africa and Asia. *S. Afr. J. med. Sci.*, 17: 117-42.
- 93a Faunal and climatic fluctuations in the Makapansgat valley: their relation to the geological age and promethean status of *Australopithecus*. *Proc. Pan-Afr. Congr. Prehis. 1947*: 96-106. Publ. by Blackwell 1952.

1953

- 94 'Africa's place in the human story'. Johannesburg, South African Broadcasting Corp. 32 p.
- 95 The predatory transition from ape to man. *Int. anthrop. ling. Rev.*, 1: 201-18.
- 96 The southern aspect of pulsating humanity. *S. Afr. J. Sci.*, 50: 37-49.
- 97 Rhodesian engravers, painters and pigment miners of the fifth millennium B.C. *S. Afr. archaeol. Bull.*, 8: 91-96.

1954

- 98 The adult female lower jaw from Makapansgat. *Nature*, 173: 286.
- 98a Also in *Amer. Anthrop.*, 56: 884-88. See also no. 101.
- 99 The significance of Makapansgat. *Z. Morph. Anthrop.*, 46: 119-23.
- 100 The second or adult female mandible of *Australopithecus prometheus*. *Amer. J. phys. Anthrop.*, n.s. 12: 313-43.
- 101 The adult female lower jaw from Makapansgat. *Amer. Anthrop.* 56: 884-88. See also no. 98.
- 102 The phylogenetic implications of African and Palestinian mandible profiles. *Amer. J. phys. Anthrop.*, 12: 487-502.
- 103 'The oriental horizons of Africa'; a series of 8 talks. Johannesburg, South African

Broadcasting Corp. and the author, 24 p.

1955

- 104 Foreign influences of the Zimbabwe and pre-Zimbabwe eras. *NADA*, 32: 19-30.  
 105 Three Strandlopers from Kaokoveld coast. *S. Afr. J. Sci.*, 51: 175-79.  
 106 Kafuan stone artefacts in the post-australopithecine breccia at Makapansgat, *Nature*, 175: 16-18. (Written with C. K. Brain and C. van Riet Lowe).  
 107 *Australopithecus prometheus* and *Telanthropus capensis*. *Amer. J. phys. Anthrop.*, n.s. 13: 67-96.  
 108 Extinct and extant human mandibles. *S. Afr. J. Sci.*, 51: 258-62.  
 109 Thirty years (1924-1954) of companionship in South African prehistory. *S. Afr. J. Sci.*, 51: 291-97. (Refers C. van Riet Lowe).  
 110 The first australopithecine fragment from the Makapansgat pebble culture stratum. *Nature*, 176: 170.  
 111 A catalogue of australopithecine fossils found at Limeworks, Makapansgat (written with E. Boné). *Amer. J. phys. Anthrop.*, n.s. 13: 621-24.  
 112 'Cultural status of the South African Man-Apes'. *Report of the Smithsonian Institution*, 1955: 317-38. Reprinted as Ch. 15 in *Readings in Anthropology*, ed. by Morton H. Fried. N. Y., Crowell, 1959, vol. 1: 292-312. Reprinted after revision by insertion of addendum at end of article in *Smithsonian Treasury of Science*, ed. by Webster P. True. New York, Simon & Schuster, vol. 3: 887-921, 1960. See also no. 122.

1956

- 113 The myth of bone-accumulating hyena. *Amer. Anthrop.*, 58: 40-62  
 114 Address at the inauguration of the 1956 session. *University of the Witwatersrand Gazette*, 1 (no. 10): 16-17, 11 May. The same number also carries on p. 15 'Natal University honours Professor R. A. Dart', giving the oration delivered by Professor S. F. Bush in presenting Professor Raymond A. Dart for the degree of Doctor of Science, *honoris causa*, at a ceremony at Natal University, on 24 Mar. 1956.  
 115 The Witwatersrand Medical Library. *University of the Witwatersrand Gazette*, 1, (no. 11): 16-19, 23 July.  
 116 The relationships of brain size and brain pattern to human status. *S. Afr. J. med. Sci.*, 21: 23-45.

1957

- 117 The early stages of Indian transoceanic traffic. *NADA*, 34: 95-115.  
 118 The osteodontokeratic culture of *Australopithecus prometheus*. *Transv. Mus. Mem.*, 10: 105 p.  
 119 South Africa and the prehistory of music. *S. Afr. J. Sci.*, 53: 192-94.  
 120 The teeth of earliest mankind. *S. Afr. J. Sci.*, 53: 229-30.  
 121 An australopithecine object from Makapansgat. *Nature*, 179: 693-95.  
 122 The Makapansgat australopithecine osteodontokeratic culture. *Proc. Pan-Afr. Cong. Prehist. Livingstone 1955*: 161-71. Publ. by Chatto & Windus, 1957.  
 123 Overseas impressions on a busman's holiday. *S. Afr. J. Sci.*, 53: 405-10.

1958

- 124 History of Medical School publications. *Leech*, 27 (no. 1): 5-7.  
 125 Address by Chairman of opening session. *Leech*, 27 (no. 2): 5-7.  
 125a Centenary coincidences. *S. Afr. archaeol. Bull.*, 13: 69-70.  
 126 Unveiling of the bust of Professor J. C. Middleton Shaw. *J. dent. Ass. S. Afr.*, 12: 430-34.  
 127 The heart of Africa. *S. Afr. J. Sci.*, 54: 192-94.  
 128 Bone tools at the Kalkbank Middle Stone Age site and the Makapansgat australopithecine locality, Central Transvaal. (Written with R. J. Mason and J. W. Kitching). *S. Afr. archaeol. Bull.*, 13: 85-116.  
 129 Bone tools and porcupine gnawing. *Amer. Anthrop.*, 60: 715-24.  
 130 A further adolescent australopithecine ilium from Makapansgat. *Amer. J. phys. Anthrop.*, n.s. 16: 473-79.  
 131 The second adolescent (female) ilium of *Australopithecus prometheus*. *Journal of the*

*Palaeontological Society of India. D. N. Wadia Jubilee Number, vol. 2: 73-82, 1957.*

- 132 The minimal bone-breccia content of Makapansgat and the australopithecine predatory habit. *Amer. Anthrop.*, 60: 923-31.

1959

- 133 Human figurines from Southern Africa. *Trab. Soc. Portug. Anthrop. Etnol. Fac. Cienc. Porto*, 17: 457-73.
- 134 Cannon-bone scoops and daggers. *S. Afr. J. Sci.*, 55: 79-82.
- 135 An australopithecine scoop from Herefordshire. *Nature*, 183: 844.
- 136 Osteodontokeratic ripping tools and pulp scoops for teething and edentulous australopithecines. *J. dent. Ass. S. Afr.*, 14: 164-78.
- 137 Science and science writing. *S. Afr. J. Sci.* 55: 210-14.
- 138 The ape-men tool-makers of a million years ago: South African *Australopithecus*—his life, habits and skills. *Illus. Lond. News.*, 234: 798-801, 9 May.
- 139 Foreword to *The Skeletal Remains of Bambandyanalo*, by Alexander Galloway, Johannesburg, Witwatersrand University Press, pp. xiii-xxii.
- 140 How human were the South African man-apes? *South African Panorama*, 4 Nov. 1959: 18-21.
- 141 The first australopithecine cranium from the Makapansgat pink breccia. *Amer. J. phys. Anthrop.*, n.s. 17: 77-82.
- 142 Further light on australopithecine humeral and femoral weapons. *Amer. J. phys. Anthrop.*, n.s. 17: 87-94.
- 143 *Adventures with the Missing Link*, with Dennis Craig. N.Y., Harper & Bras; London, Hamish Hamilton, xv, 251 p. illus. Reprinted paperback edition (N.Y., Viking Explorer Books, 1959, Philadelphia, Institutes for the Achievement of Human Potential, 1967). Translation in Japanese, 1960; Polish, 1961; Spanish, 1962; Czechoslovakian, 1963.
- 144 On the evolution of language and articulate speech. *Homo*. 10: 154-65.
- 145 Progress in investigating African apes in their natural habitat. *S. Afr. J. Sci.*, 55: 305-10.
- 146 A tolerably complete australopithecine cranium from the Makapansgat pink breccia. *S. Afr. J. Sci.*, 5: 325-27.

1960

- 147 The place of antelope cannon-bones (or metapodials) in australopithecine economy. *Z. Wissensch. Zool.* 68: 1-15.
- 148 Memorandum on the preservation of the African great apes. *S. Afr. J. Sci.*, 56: 1-4.
- 149 Primate research in Africa. *S. Afr. J. Sci.*, 56: 63.
- 150 The persistence of some tools and utensils found first in the Makapansgat grey breccia. *S. Afr. J. Sci.*, 56: 71-74.
- 151 The urgency of international intervention for the preservation of the mountain gorilla. *S. Afr. J. Sci.*, 56: 85-87.
- 152 Can the mountain gorillas be saved? *Curr. Anthrop.*, 1: 330-31.
- 153 The bone-tool manufacturing ability of *Australopithecus prometheus*. *Amer. Anthrop.*, 62: 134-43.
- 154 *Pithecanthropus and Australopithecus*: *Z. Morph. Anthrop.*, 57: 261-74.
- 155 'Africa's place in the emergence of civilisation'. Inaugural Van Reibeeck Lectures. Johannesburg, South African Broadcasting Corp., 95 p., illus.
- 156 Obituary. Guy Atwater Gardner 1880-1959. *S. Afr. archaeol. Bull.*, 15: 3-4.
- 157 The recency of man's aquatic past. *New Scientist*, 7: 1668-70.
- 158 The Institute for the Study of Man in Africa. *SAMAB*, 7: 122-25.
- 159 See under 112b
- 160 The status of *Gigantopithecus*. *Anthrop. Anz.*, 24: 139-45.

1961

- 161 Further information about how *Australopithecus* made bone tools and utensils. *S. Afr. J. Sci.*, 57: 127-34.
- 162 The history of physiotherapy education in South Africa. *S. Afr. J. Physiotherap.*, 17:

- (no. 2): 2-5.
- 163 An australopithecine scoop made from a right australopithecine upper arm bone. *Nature*, 191: 372-73.
- 164 Africa's place in the evolution of man. *Ann. Proc. Ass. Sci. Tech. Soc. S. Afr.*, 1959/1960: 21-41.
- 165 The Kisoro pattern of mountain gorilla preservation. *Curr. Anthop.*, 2: 510-11.
- 166 Presidential address on 'Weightlessness'. *S. Afr. J. Physiotherap.*, 17: 3-5.
- 1962
- 167 'The gradual appraisal of *Australopithecus*'. Ch. in *Evolution and Hominisation*, ed. by G. Kurth, Stuttgart, Fischer, pp. 141-56.
- 168 Siegfried and *Australopithecus*. *Probe* the journal of the Science Students' Council, University of the Witwatersrand. 1: 14-21.
- 169 Foreword to *Prehistory of the Transvaal*, by R. J. Mason, Johannesburg, Witwatersrand University Press, pp. xv-xx.
- 170 The most complete skull from the pink breccia at Makapansgat. *Actes Cong. Panafr. Prehist. Etude Quart. Mus. Roy. Afr.*, no. 40: 337-40. See also no. 174.
- 171 The continuity and originality of australopithecine osteodontokeratic culture. *Ibid.* 40: 27-41.
- 172 The functions of museums: presidential address. *SAMAB*, 7: 302-11.
- 173 The first South African archaeological tour. *Jewish Affairs*, 7: 14-16, July.
- 174 The Makapansgat pink breccia australopithecine skull. *Amer. J. phys. Anthrop.*, n.s. 20: 110-26. See also no. 170.
- 175 Substitution of stone tools for bone tools at Makapansgat. *Nature*, 196: 314-16.
- 176 Stalactites as a tool material for the australopithecines: a missing cultural link between skeletal and stone tool making from the Makapansgat stalactitic cavern. *Illus. Lond. News*, 241: 1052-55, 29 Dec.
- 177 A cleft adult mandible and the other nine lower jaw fragments from Makapansgat. *Amer. J. phys. Anthrop.*, n.s. 20: 267-86.
- 178 From cannon-bone scoops to skull bowls at Makapansgat. *Amer. J. phys. Anthrop.*, n.s. 29: 287-95.
- 179 Death ships in South West Africa and South-East Asia. *S. Afr. archaeol. Bull.*, 17: 231-34.
- 180 Review of *Prehistory of the Transvaal*, by R. J. Mason, Johannesburg, Witwatersrand University Press, 1962. In *Convocation Commentary* (Witwatersrand University) no. 3, 1962.
- 1963
- 181 Paintings that link South with North Africa. *S. Afr. archaeol. Bull.*, 18: 29-30.
- 182 The initiation of occupational therapy in South Africa. *S. Afr. J. occupat. Therap.*, 1 (11): 4-6, Sept.
- 183 The carnivorous propensity of baboons. *10th Symp. zool. Soc. London.*, no. 10: 49-56.
- 184 Address opening the Exhibition of 'Man in Africa' held in the City Hall, Johannesburg, 20 May 1963. Also roneo publications by the Institute for the Study of Man in Africa.
- 1964
- 185 The Associated Scientific and Technical Societies of South Africa. *S. Afr. J. Sci.*, 60: 129-31. Edited version of radio statement broadcast in 'Top Level' on Springbok Radio, 15 March 1964.
- 186 Contribution to discussion of paper on Technical aspects of the development of copper and the advances being made in its application to industrial uses, by P. B. Lee. *Certificated Engineer* 37: 311-13.
- 187 Science and Industry: Wetenskap en Industrie: a review. *S. Afr. J. Sci.*, 60: 297-98.
- 188 Foreword to *Now-Men and Tomorrow-Men*, by G. M. Mes. Johannesburg, Afrikaanse-Pers-Boekhandel.
- 189 Voorwoord aan *Die Wording van die Mens*, deur L. W. Cornwall en M. M. Howard, Kaapstad, Human en Rousseau.

- 190 The Abbé Breuil and the osteodontokeratic culture. In *Miscelanea en homenaje al Abate Henri Breuil*. Barcelona, Instituto de Prehistoria y arqueologia, Monografias 11: 347-70.
- 191 A review of *Indaba My Children*, by Vuzumazulu C. Mutwa. Johannesburg, Blue Crane Books. *Sci. S. Afr.* 2 76-78.
- 192 'The ecology of the South African Man-Apes'. In *Ecological Studies in Southern Africa*, ed. by D. H. S. Davis, Den Haag, Junk, Ch. 4: 49-66 + 3 pls. See also nos. 195-197.
- 1965
- 193 'Spotlight on a new book' a review of *Suggested Norms of Physical Status for White South Africans aged 10-26 Years*, by C. S. Grobbelaar. Cape Town, Struik, 1965. *Scientiae* 6(2): 11-12.
- 194 Dedication. Address given at a special ceremony of dedication for graduating students, 26 Nov. 1964. *Transv. educat. News*, Jan. 1965.
- 195 Fish as symbols of life and luck (written with A Nishimura). *Sci. S. Afr.*, 1: 507-10, 1964.
- 196 Review of *The Basis of Human Evolution*, by Bertram S. Kraus. N.Y., Harper & Row. *Sci. S. Afr.* 2: 445-46.
- 197 Australopithecine acceptance, some of its effects. Presidential address. *Ann. Proc. Ass. Sci. Tech. Soc. S. Afr. 1963/ 64*. Publ. Sept. 1965.
- 198 'Beyond antiquity, a series of radio lectures on the origin of man'. Johannesburg, South African Broadcasting Corp., 119 p. Also long-playing record pressed in 1966.
- 199 Obituary on Matthew Robertson Drennan, MB, ChB (Edin.) FRCS (Edin.). *S. Afr. med J.*, 39: 828-29. See also nos. 208 and 214.
- 200 Pounding as a process and the producer of other artefacts. *S. Afr. archaeol. Bull.*, 20: 141-47.
- 201 Recent discoveries during excavaion preparation at Makapansgat. *S. Afr. archaeol. Bull.*, 20: 148-54.
- 202 Australopithecine cordage and thongs. In *Homenaje a Juan Comas en su 65 Anniversario*, 11. Editorial libros de Mexico, 1965: 43-61.
- 203 A brief review of the Makapansgat investigations 1925-1953. *Mem. R. Acad. Cienc. Lisb.*, Classe de Ciencias 9: 1-16 + pls.
- 204 Tree chopping with an elephant rib. *S. Afr. J. Sci.*, 61: 395-96.
- 205 Ahla, the female baboon goatherd. *S. Afr. J. Sci.*, 61: 319-24.
- 206 Review of *Olduvai Gorge 1951-61*. Volume 1. A preliminary report of the geology and fauna, by L. S. B. Leakey, Cambridge University Press, 1965. *S. Afr. J. Sci.*, 61: 226-28. See also no. 209.
- 1966
- 207 Comparison of three distal humeral objects from Fontechevade with some from Makapansgat. *S. Afr. J. Sci.*, 62: 21-25.
- 208 Obituary. Professor Matthew Robertson Drennan (1885-1965). *S. Afr. J. Sci.*, 62: 11-23. See also nos. 199 and 214.
- 209 The unavoidable osteodontokeratic culture. *D. N. Wadia commemorative volume. Mining and metallurgical Institute of India*, pp. 231-54, 1965.
- 210 Review of *Sir Andrew Smith MD., KCB.*, by Percival R. Kirby, Cape Town, Balkema. *Afr. Stud.*, 25: 101-05.
- 211 Vote of thanks for presidential address on Engineering aspects and the human body, by E. W. Gray. *S. Afr. mech. Engr.*, 15: 280-82.
- 212 A Tribute to Reginald Ruggles Gates.. *Mankind Quart.*, 7: 48-52.
- 213 Le progres de la recherche archéologique en Afrique du sud. *l'Anthropologie*, 70: 63-102.
- 214 Obituary. Matthew Robertson Drennan: elder brother and friend. *Med. Proc.*, 12: 462-471. This article also has a photograph of the bronze bust of Professor Dart sculptured by Dr Jack Penn of Johannesburg.
- 215 Looking ahead. Presidential address at 6th Annual National Council, South African Society of Physiotherapy, Pretoria. 4 Sept. 1966. *S. Afr. J. Physiotherap.* 22(4): 2-

## 3.

1967

- 216 Toast to the Alma Mater delivered on the occasion of the dinner to commemorate the 70th anniversary of the establishment of the South African School of Mines 24, Nov. 1966. *Convocation Commentary* (Univ. of the Witwatersrand) no. 1: 2-3. 'We're proud of you Professor Dart.' Editorial. *ib.*, p.3. There is also a photograph of Professor Dart on the cover of this number.
- 217 The antiquity of mining in Southern Africa. *S. Afr. J. Sci.*, 63: 264-67.
- 218 Human Potential. *Human Potential*, 1 (1) 41-43.
- 219 Amazing antiquity of mining in southern Africa. (Written with Peter Beaumont) *Nature*, 216 (5113): 407-8.

1968

- 220 The multimillennial prehistory of ochre mining. *NADA* 9(7): 7-13.
- 221 The birth of symbology. *Afr. Stud.* 27: 15-27.
- 222 Review of *Man-Apes or Ape-Men?*. The story of discoveries in Africa by Sir Wilfrid Le Gros Clark. N.Y., Holt., 1967. *Af. Stud.* 27: 50-53.
- 223 Raymond A. Dart 75th Birthday Number. *S. Afr. J. Sci.*, 64: 41-140.
- 224 Ratification and retrocession of the earlier Swaziland iron ore mining radiocarbon datings, (with Peter Beaumont). *S. Afr. J. Sci.*, 64: 241-46.
- 225 *Australopithecus* tool-user or tool-maker? *Israel Acad. Sci. Humanities. Proc. Sect. Sci.*, no. 8, pp. 1-12, 1968.
- 226 The gradual appraisal and acceptance of *Australopithecus*. Ch. in *Evolution und Hominisation*, 2nd ed. by G. Kurth, Stuttgart Fisher.
- 227 Australopithecine. Art. rev. for *Encyclopaedia Britannica*.
- 228 A phylogenetic approach to therapy. *Leech*, 38: 57-61.

1969

- 229 Mousterian osteodontokeratic objects from Geula cave (Haifa, Israel) *Quaternaria* 9: 105-140, 1957.
- 230 Reading: past, present and future. *S. Afr. Libraries.* 36: 79-84, 93.
- 231 Evidence of iron ore mining in southern Africa in the Middle Stone Age. *Curr. Anthropol.* 10(1): 127-28.
- 232 Iron Age radiocarbon dates from western Swaziland. *S. Afr. Archaeol. Bull.*, 24: 71 (with Peter Beaumont).
- 233 Saying Farewell. *S. Afr., J. Physiotherapy*, 24: (3) 2-4
- 234 Comments on 'A survey of intrahuman killing in the Pleistocene' by M. K. Roper. *Curr. Anthropol.* 10 (4) Oct. 452-3.
- 235 The bloodstone source of metallurgy. *Trab. Soc. Portug. Antrop. Etnol. Fac. Ciênc.* 110-129.

1970

- 236 Nuclear Antiquity<sup>1</sup>. Dating Man and 2. Beyond the mists of mining (A. K. Boshier and P. B. Beaumont) *Nuclear Active* 1. *S. Afr. Atomic E. Board*.
- 237 An anatomist's tribute to F. Matthias Alexander. London, Shelldrake Press, pp. 35.
- 238 Indian trans-oceanic navigation: its primary place. *Bull. Indian Geol. Assoc* 2 (3 & 4): 75-85, 1969.
- 239 On a further radiocarbon date for ancient mining in Southern Africa. *S. Afr. J. Sci.* 67 (1): 10-11 (with P. B. Beaumont).
- 240 Preface to, *Dr Robert Broom FRS*, 1970, by G. H. Findlay, Balkema, Cape Town, 1972.

1972

- 241 Associations with and impressions of Sir Grafton Elliot Smith, *Mankind*, 8, 1972, 171-5.
- 242 Sir Grafton Elliot Smith and the evolution of man, in *Grafton Elliot Smith: The Man and His Work*, (eds.) Elkin, A. P. & Macintosh, N. W. G., Sydney University Press, Sydney, 1974, 25-38; address given at Great Hall 30 Oct. 1972.

- 243 Early man, talk given at University of Sydney 1 Nov.1972.  
 244 Diffusion in Africa, talk given at University of Sydney 2 Nov.1972.

1973

- 245 Recollections of a reluctant anthropologist, *J. of Human Evol.* 1973. 2: 417-427.

1974

- 246 'The Evolution of Man', in *Grafton Elliot Smith: The Man and His Work*, eds. A. P. Elkin & N. W. G. Macintosh, Sydney, 1974, pp.25-38.

Professor Dart throughout his life gave many lectures worldwide which were not recorded.

#### **ADDITIONAL DARTIANA**

*Dart Festschrift.* In honour of Professor Raymond Arthur Dart on his retirement from the Chair of Anatomy of the University of the Witwatersrand, Johannesburg. A tribute by his distinguished colleagues from many corners of the earth. Presented to Professor Dart by his past and present students. Edited by Phillip V. Tobias, Reuben Plotkin. Reprinted from *The Leech* 38 (3,4 and 5): 85-155, 1958, in a specially bound edition limited to 100 copies. There is a detailed biographical sketch and appreciation as well as a bibliography to the end of 1958.

*South African Journal of Medical Sciences*, 23: nos. 3 and 4, Dec. 1958, was published in honour of Professor Raymond Dart.

*The citation* delivered by Professor S. P. Jackson in presenting Professor R. A. Dart for the degree of Doctor of Science *honoris causa* at a special ceremony at the University of the Witwatersrand, on 28 Feb. 1964. *University of the Witwatersrand Gazette*, 6:( no. 1) 12-14, including photograph.

*Raymond Dart Lectures.* Established and published by the Institute for the Study of Man in Africa to perpetuate and foster the work on Man in Africa begun by Professor Dart during his thirty-six years' tenure as Professor of Anatomy in the University of the Witwatersrand. An annual Lecture has been established and is defined by the scope of the Institute itself, namely the Study of Man in Africa, past and present, in health and disease. Lecture 1. The australopithecine fossils of Africa and their geological setting, delivered by S. H. Haughton on 23 Feb. 1964, contained the citation read on the occasion of the conferment of the Honorary Degree of Doctor of Science upon Raymond Arthur Dart by the University of the Witwatersrand.

*Raymond A. Dart Taung 1924-1974*, text by Roy Terry and produced by The Museum of Man and Science commemorating the 50th Anniversary of the discovery of the 'Missing Link' by Professor Dart at Taung in 1924.

*Prof. Raymond Dart*, in *South African Panorama*, Nov. 1974, commemorating the 50th anniversary of Dart's Taung skull discovery in 1924.

*Emeritus Professor Raymond A. Dart*, Banquet by the University of the Witwatersrand in his honour to celebrate his 90th birthday on 4 Feb. 1983.

*Taung Diamond Jubilee International Symposium, University of the Witwatersrand, Johannesburg and University of Bophuthatswana, Mmabatho, 27 Jan.-4 Feb. 1985*, to commemorate Dart's Taung 1924 discovery, and to celebrate his 92nd birthday.

'Professor Raymond Dart Centenary of Birth Celebrations', were held at Ipswich Grammar School, 4 Feb. 1993. A full school assembly of 1200 boys, 75 members of staff and 50 invited guests saw Headmaster Igor Lapa open the assembly and hear several speakers, Frances Wheelhouse, Professor John Pearn (AM), Dr Sam Mellick and Sir Llewellyn Edwards who unveiled a bronze bust of Raymond Dart.