

PHARMACY - YESTERDAY
TO-DAY AND TO-MORROW

INAUGURAL LECTURE DELIVERED AT
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BY

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THE OATH OF MAIMONIDES

“Thy Eternal Providence has appointed me to watch over the life and health of Thy creatures.

“May the love for my art actuate me at all times; may neither avarice nor miserliness, nor thirst for glory, or for a
• greater reputation engage my mind; for the enemies of Truth and Philanthropy could easily deceive me and make me forgetful of my lofty aim of doing good to Thy children.

“May I never see in the patient anything but a fellow creature in pain. Grant me strength, time and opportunity always to correct what / have acquired, always to extend its domain; for knowledge is immense and the spirit of man can extend infinitely to enrich itself daily with new requirements. Today he can discover his errors of yesterday and tomorrow he may obtain a new light on what he thinks himself sure of today.

“O God, Thou hast appointed me to watch over the life and death of Thy creatures: here am I ready for my vocation.”

YESTERDAY

Five seas encompass that land, Mesopotamia, which is accounted the cradle of civilization.

In this 'Fertile Crescent' civilizations waxed and waned, great kings arose and wrote their names in history, nations built their futures upon the ashes of fallen cities, and with the servitude of conquered peoples. (1).

Our knowledge of medicine and pharmacy as practised in the Land of the Two Rivers comes to us from the Library of Assurbanipal, but the knowledge gleaned from the tens of thousands of clay tablets represents the accumulation of three millenia of living, the experiences of many civilizations. (2).

The Sumerians, the first peoples of this land were highly civilized; an agricultural people, they knew the wheeled cart but not the horse, had weapons and ornaments of copper, but had not discovered the secret of tempering it into bronze.

The Sumerian City-Kingdoms had their priests, for religion played no small part in their lives, and later their priest-kings. Medicine and Pharmacy evolved slowly. Illness was a divine punishment requiring priestly intercession and administrations. Offences against the Gods withdrew their natural protection against the invisible demons which peopled the very air, necessitating propitiation by sacrifice, even human sacrifice.

From individual and personal intercession, the development of a communal interceder or priest was a natural and logical step, and the elevation of a priest to a priest-king, the natural consequence of the growth of a community to a city-state.

Sumer fell to Sargon, King of Akkad, who welded both into the kingdom of Sumer-Akkad, which fell in its turn to the invading bands of Amorites, who created the Kingdom of Babylon.

Hammurabi, King of Babylon (ca. 2123-2081 B.C.), sixth of his line, ordered the ancient laws codified and carved upon stone that all might read. Done in the Semitic tongue upon a pillar of diorite erected in the Temple of Marduk in Sippara, the Code throws light upon the medical practice of the day.

Unearthed in 1902, and housed now in the Louvre, the code shows the existence of general practitioners in medicine. They worked under adverse conditions, for part of the Code reads:—"If a doctor . . . has opened a man's tumour with a metal knife and destroyed the eye, his hands shall be cut off." (3).

Such penalties were calculated to discourage surgery, and to stimulate research into the action of plants and preparations made from them in the treatment of disease. That considerable progress had been made in this field is evidenced by the fact that a separate class of preparers of medicines existed, and in Sippara lived in a street apart, as 'by ancient custom'. (4).

There existed then in Mesopotamia about 2000 B.C. both a medical and pharmaceutical fraternity, of such a degree of advancement as to necessitate legislation controlling them and laying down fees, at the same time protecting the people from sorcerers, who professed to cast out the devils of sickness.

Babylonian domination gave way to that of the Assyrians, who traded with the known world through the agency of the argosies of the Phoenicians, and the camel trains of the Arameans.

Assyrian greatness began with Sargon II, whose son Sennacherib (705-681 B.C.) razed the city of Babylon, and whose grandson Esarhaddon (681-668 B.C.) built the city of Nineveh for his capital, and whose empire stretched from the plateau of Iran to the Libyan desert, and to the Levant, including Cyprus.

The latter's son Assurbanipal (668-621 B.C.) created in his palace of Nineveh, a library of tens of thousands of clay tablets, forming a comprehensive treatise on science, history, astrology and medicine. The drugs in common use numbered six hundred or more, many of them still in use today. Indigenous plants were

in organised cultivation, and herb gardens were numerous throughout the land, and a pharmaceutical industry was well established.

The medicaments used included olive, castor and almond oils, the fats of animals both wild and domestic, and honey and beeswax. Myrrh was brought from Somaliland, ammonium from the Temple of Ammon in Libya, and asafoetida from the shores of the Caspian Sea and the Sea of Aral.

The opium poppy was indigenous, and its virtues known, and anaesthesia practised.

The forms which medicines took were not unlike those of today. Liquid medicines were prepared as draughts, mixtures or medicated wines. Ointments, salves, liniments, lotions, plasters and poultices were common methods of medication.

Assyrian medicine used mineral substances also, over 100 of them, as well as human and animal excreta. (5).

A survey of the London Pharmacopoeia of 1618 leads to the conclusion that it could almost as readily have been written by the physicians of Assurbanipal two thousand years previously.

EGYPT

The story of Egyptian medicine and pharmacy is more fully documented. The writings of the Egyptian Monethos, the Greek Herodotus (480-425 B.C.) and of Pliny (1st century A.D.) illuminate the subject, as do the several medical papyri which have been unearthed and translated. (6).

The American pharmacist-egyptologist, J. H. Breasted, published a commentary on the Edwin Smith papyrus, and von Klein on the Ebers papyrus. The Babylonian-Assyrian culture and that of Egypt show a close relationship, and this is displayed in these papyri.

Separation of the art of the pharmacist and the physician is evident, the word pharmacist being derived from 'ph-ar-Maki', meaning 'warrant of security', and signifying the preparation of drugs.

The Egyptian 'ph-ar-maki' were initially of the priestly class, and later of the academically trained section of the people, the physicians, lawyers, and civil servants.

In a history riddled with mythology it is not always easy to separate fact from fiction. The Ebers papyrus however lists some 700 drugs, animal, vegetable and mineral and a wide variety of methods of administration and application, many known and used even today.

At the zenith of Egypt's development, she had an organized drug market, contact with the furthest corners of the known world by which she acquired exotic drugs, some of which she introduced into cultivation. (7).

After the 16th Century B.C. Egypt fell into decline, and medicine and pharmacy tumbled into the hands of sorcerers ;and magicians.

GREECE AND ROME

In the formative days of Greece, medicine was a mixture of mythology and rationality, which it is difficult to resolve. Clear is the development of a priestly system, the so-called system of Asclepius. The temples devoted to the cult became famous, were in fact sanatoria for the treatment of the chronic sick, lay physicians caring for the less seriously ill. (8).

The Asclepian system of diet, rest and baths, coupled with the nocturnal visits of the Gods continued in force for a millenium, until the emergence of the Greek philosophers. Medicine then ceased to be a secret cult, and benefited by being brought into the open, debated and discussed. A new system of medicine arose based upon observation, deduction and inference.

This was the Hippocratean age, named from Hippocrates, the so-called 'Father of Medicine', whose existence it is fashionable to doubt, and whose authorship of the Hippocratean Corpus is frequently denied. (9).

The books comprising the Hippocratean Corpus listed upwards of 400 drugs and a wide variety of pharmaceutical preparations. A class of *rhizotomoi* arose who collected and sold

the medicinal plants—others manufactured and sold proprietary remedies.

There was however no class of pharmacists, and it is clear that the physicians of that day, were in fact apothecaries, preparing their own remedies and administering them.

Rome inherited the medical traditions of Greece, as Greece had those of the Egyptian and Babylonian cultures. She did little however to embellish them for it was beneath the dignity of a Roman citizen to become a physician, and doctors in Rome were usually of Greek origin. Such were Pedanios Dioscorides (1st Century A.D.) (10) and Claudius Galen (121-201 A.D.). (11).

Both were authors of medical works, the latter of the 'De Materia Medica Libra Quinque', translated into English as late as 1655. Both were expert pharmacists, but the latter writing with more apparent authority was universally accepted. His death ended all serious research on the grounds that Galen had discovered all there was to know and published it.

In Rome as elsewhere physicians were few and for the wealthy only. Amongst the poorer peoples quacks flourished, and a brisk trade in proprietary remedies was supported by all.

The conquest of most of the known world by Rome spread her system of medicine everywhere, even to the remote province of Britain.

Roman physicians were the counterpart of the British surgeon-apothecary of the 18th century; trained by apprenticeship, wedded to the Galenic concept, for the most part devoid of originality, contributing nothing except a sound knowledge of sanitation.

THE ARABIAN INFLUENCES

Greco-Roman culture was in turn inherited and embellished by the Arabs, a term which included men of all races and of all religions. The Nestorian Schools of Medicine at Edessa and at Jundi-Shapur were engaged for 200 years in translating Greek texts into Arabic.

The works of Hippocrates, Dioscorides and Galen were thus made widely available by the activities of these early medical publishing houses.

During the six centuries of its dominance, the Arab nation produced many physicians and pharmacists of note. It is credited with the first separation of the arts of medicine and pharmacy, and with the establishment of the first privately owned and government supervised pharmacy.

The patron saints of medicine and pharmacy are the Christian Arabs, Damian the apothecary and Cosmas the Physician, martyred in 303 A.D.

Prominent amongst Arabian writers was Avicenna, the Persian Galen (980-1037 A.D.), who wrote the Canon of Medicine, the fifth book of which was devoted to drugs, their properties and the methods of preparing them. The Canon was accepted in the West until far into the 17th century and is still dominant in the Orient.

To quote Dr. Meyerhof, "Islamic medicine reflected the light of the Hellenic Sun . . . and shone like a moon in the Dark Ages. Some bright stars lent their own light and moon and stars alike faded at the dawn of the Renaissance." (12).

THE DEVELOPMENT OF PHARMACY IN ENGLAND

"To Aetius, three times Consul, the groans of the Britons. The barbarians drive us to the sea, the sea drives us to the Barbarians".

So records Gildas the agony of the Britons after Rome had withdrawn her protective mantle, which had been spread over the island for 500 years (55 B.C.-448 A.D.).

The system of priest-physician which had obtained in England and Wales under the Druids had been finally destroyed on the Island of Mona in 61 A.D. when the last of the Druids fell hurling defiance against Rome and her forces. (13).

The Roman system of military medicine which had been impressed upon all Europe was now withdrawn, along with

orderly government—and chaos reigned supreme. The Church offered the only haven of refuge, the only source of comfort, bodily and spiritual. The monastic libraries housed the medical works of the Greek authors, translating these and transcribing them gave the monks some knowledge of medicine, and it was usual for one within each monastery to assume the post of apothecary-physician to his brethren. What more natural than that the lay public should also seek medical aid within the monasteries, to which indeed, a great many of them were bound in villeinage.

Gradually the monasteries became centres of medical service, establishing herb gardens, even hospitals, and eventually the whole domain of medicine passed into the conserving arms of Holy Church. It suffered at the hands of the clerics a change in theory if not in practice. St. Augustine himself summed up the attitude of the Church: “All diseases of Christians are to be ascribed to demons”, and St. Bernard, founder of the Cistercian order, forbade monks to study medicine, and commanded them < in sickness to decline all remedies save prayer.

Prayers, the laying on of hands, exorcism, holy relics and amulets were the Church’s adjuncts to the treatment of disease by the methods of Hippocrates.

The laying on of hands continued in the guise of the Royal Touch until the death of Queen Anne, the only Sovereign to see its performance by royalty in its true light being William III, who prayed ‘May God grant you better health’ and added sotto voce ‘and more sense!’

The high dignitaries of the Church became alarmed at the excursions of her priests into medicine, often to the neglect of their spiritual duties. Pope Innocent III in 1139 A.D. convened the Council of Rheims, which forbade the practice of medicine to clerics, and enjoined them to be more diligent in the pursuit of theology. (14).

Pope Alexander III found it necessary thirty years later to threaten excommunication if the edict were not obeyed, but so great was the pressure from the layman, that eventually a compromise was arrived at, that priests might practise medicine, but not surgery. (15).

By the time England had become a unified monarchy the priest-physician had become established. Baldwin, Prior of Deerhurst, was physician to the Confessor, and to William of Normandy; Richard of Ely, Bishop of London, Physician to Henry II (1154-1189), and John of Gaddesden, Professor of Physic at Merton College, Oxford, and Prebendary of St. Paul's, to Edward II (1307-1327). (16).

John of Gaddesden was chosen by Chaucer as his model for the Doctor of Phisike, and in the Canterbury Tales the poet shows that the separation of medicine into the domain of the physician proper, and the domain of the apothecary was already established:—

'Ful reddy hadde he his apothecaries
To send him drugges and his lethuaries',

'a sting being contained in the following line:—

'For eche of him made other for to Winne'

a satirical stab at the association of the two professions for mutual profit! (17).

The separation of the two professions had been of legal force on the Continent for some years. Frederick II, King of the Two Sicilies, Holy Roman Emperor, had made an edict to this effect in 1240 A.D. at the request of the practitioners themselves. In force only in the two Sicilies, the edict and the separation resulted in the spontaneous separation throughout Europe.

Europe became the accepted training ground for apothecaries, and Montpellier the most famous school. It is not surprising therefore to find that English apothecaries were originally of continental origin. Edward I (1272-1307) had his Royal Apothecary, Henri Montpellier, and Edward III (1327-1377) during the half century of his reign had several in his service:—

Pierre de Montpellers (1320)
Roger de Frowicke (1329)
Coursus de Gangeland (1345)
J. Falcande de Lucca (1357). (18).

During the reign of Henry II, the apothecaries were associated within the Guild of Pepperers, the Guild having custody of the Great Beam, thus exercising control over the

weights of the Kingdom. This guild was ruined by the excessive taxations of Edward III, but was revived as the Company of Grocers, a body which was chartered by Henry VI in 1428. (19). Within this Company were gathered the *grosarii*, i.e. the dealers *en gros*, and the apothecaries, the latter compounding the formulae as written in existing herbals, and making up the physicians' prescriptions or bills.

Outside London the monastic tradition of medical practice continued in full force, until the reign of Henry VIII (1485-1509), and his son, Henry VIII (1509-1547). The number of recruits to the monastic life had fallen greatly; Cardinal Wolsey had suppressed some monasteries, Cromwell furthered the dissolution—and threw ten thousand monks back into the world.

Physicians and apothecaries, trained and untrained, were now becoming more numerous, and Henry VIII's Parliament found it necessary in 1511 to pass an 'Act for the appointing of Physicians and Surgeons' (20), requiring all who desired to practise to be licensed by the Bishop of the Diocese, 'calling to him . . . four Doctors of Physic'. Those who submitted themselves to examination were educated by apprenticeship, or were spicers or apothecaries who had gained some experience in herbs and studied the accepted herbals.

The King's physician, Thomas Linacre (1461-1524), persuaded Henry to grant a Charter of Incorporation to the physicians of London, and the College of Physicians was born. It became the Royal College of Physicians in 1540, its scope being extended to empower its members to enter the apothecaries' shops in London and 'to search, view and see the apothecary ware . . . and to destroy such as they found corrupt'.

In this year of 1540, the Barbers and Surgeons were united into one Company, and practice restricted to members.

In 1542, impatient perhaps with the inability of licensed practitioners in medicine and surgery to cure his ulcerated leg, Henry, through his Parliament, enacted legislation which enabled anyone to treat the sick, provided it was not done for gain. (21).

This Act of Henry's declining years was the apothecaries' charter, since they could now legitimately treat the sick, pro-

vided they did not charge for their services, only for the medicines supplied. Henceforth the common people who could not afford to pay a regular physician turned to the apothecary for medical treatment.

The College of Physicians was made further secure by an Act of Mary I (22), by which they were given authority to 'examine, survey, govern, correct and punish all and singular Physicians. . . . Apothecaries, Druggists . . . and preparers of chemical medicines'. Here for the first time is official reference to the changing face of medicine; to the apothecaries are added the druggists and the chymists, people skilled in preparing the new inorganic substances, which were rapidly being adopted into the *Materia Medica*.

' In 1617, during the reign of James I and VIth, the Apothecaries were Chartered under the style of 'The Master and Wardens of the Art and Mystery of the Apothecaries of the City of London'. This creation of the apothecaries into a city Guild was advised by Gideone de Laune, Apothecary to James's Queen, Anne of Denmark, and by Sir Theodore de Mayerne, James's physician. Both were Protestant Frenchmen, and naturally advised imposition of a system similar to that obtaining in France, and to that in Scotland.

One hundred and fourteen founder members formed the body of the Society; since there were 114 physicians practising in London, under licence from the College of Physicians, it is clear that the function of the apothecary was intended to be that of the physician's amanuensis, preparing and administering the remedies ordered by the physician.

The apothecaries found themselves from the first involved in diagnosing and treating disease, the domain, morally if not legally of the physician, and by 1630 the College of Physicians was petitioning the Star Chamber against the apothecaries' trespasses, but to no avail, and the apothecary fast became the general practitioner of medicine.

One of the reasons for the success of the apothecary as a physician is given by Robert Masters Kerrison:—(23).

“The state of Society at the establishment of the Royal College of Physicians was widely different from what it is at present (i.e. 1815). The ancient nobility and a few rich citizens constituted one class of persons, whilst the servants and dependants of the former, added to the workmen and labourers of the latter, formed another class. The noble and wealthy could afford to fee their physicians, and it was not usual in those days to legislate for the wants and convenience of others. The progress of commercial prosperity since that time has so greatly multiplied that it may almost be said to have created a third, which is now the most numerous class of people—the middle order of Society. One effect of this was a proportionate increase in sickness amongst people who were unable to procure medical aid by feeing physicians . . . and the Royal College of Physicians having made no diminution in their fee . . . they were compelled to resort to others for advice”.

A second contributory factor was the reaction of the physicians to the Great Plague. (Spring 1655-Sept. 1666). (24). With the appearance of the plague the physicians joined in the general exodus from London; the apothecaries stayed behind.

The physicians avowed that the apothecaries, ‘being base born and owning no estates or landed relatives’ (25) had no havens of refuge to which to flee, and furthermore it was their deliberate intent to stay and filch the physician’s practices.

Nobility of purpose and devotion to the healing of the sick was the reason advanced by the apothecaries.

The truth is that the apothecaries were in the main dependent upon their earnings, and had to make choice between fleeing and starving, or staying and taking their chance with the plague.

A third and overriding reason for the decline of the physician was, quite simply, that as a body they had failed to advance with the times, and in not doing so had become in many instances figures of ridicule. (26).

For the most part the physicians clung to the outmoded methods for Galen and Dioscorides, whilst the apothecaries had, at least, developed an empirical system of medicine based upon

application, observation and deduction, and this system produced results.

The redundancy of the physicians' methods is well illustrated by the treatment meted out to King Charles II on his deathbed in 1685. Churchill records: "An apoplectic stroke laid him low. The doctors of the day inflicted their tormenting remedies upon him in vain". (27). The following treatment was accorded the unfortunate Merry Monarch:—

- he was bled one pint from the right arm.
- he was cupped, eight ounces of blood being removed.
- he received an emetic, followed by a purgative, and then another emetic.
- he was given an enema made up of antimony, fennel seed, cinnamon, linseed, mallow leaves, violets, saphron, cochineal and aloes.
- this was repeated after two hours, followed by a purgative.
- his head was then shaved, blistered, and he was given a sneezing powder, followed by an infusion of cowslip flowers to strengthen his grain.
- then a soothing drink of barley, sweet almond, liquorice, white wine, absinthe, extract of thistle leaves, mint, rue and angelica.
- a plaster of burgundy pitch and pigeon's dung was applied to his feet.
- the purgings and bleedings were continued, and as a last resort he was given 40 drops of extract of human skull!

It is recorded that "After an ill-fated night His Serene Majesty's strength seemed exhausted to such a degree that the whole assembly of physicians lost all hope and became despondent". (28). The wonder is that His Serene Majesty had sufficient strength to utter that phrase which has become his epitaph, 'Let not poor Nellie starve'!

This ineptitude of the average physician impressed itself upon the man in the street, and the physicians did not add to their professional dignity by indulging in a long drawn out wordy battle with the apothecaries, through the press and by

way of pamphlets. Meanwhile the apothecaries were becoming more and more firmly entrenched in their role of general practitioners.

For the first time it became possible for the ordinary man to aspire to professional status, and in the main, apothecaries were the 'sons of small shopkeepers, yeomen and respectable craftsmen'. (29).

The training of the apothecary involved an apprenticeship of seven years, followed by an examination before the Master and Wardens of the Society, together with the President of the College of Physicians. (30). In their training the apothecaries followed, unconsciously perhaps, in the footsteps of Hippocrates who wrote:—

'There is no authority except fact.
Facts are obtained by accurate observation.
Deductions are to be made only from facts.' (31).

One by one the ridiculous remedies hitherto in use were discarded and new ones substituted, drawn largely from the British flora, and whose effects had been observed in practice.

The physicians now began to compete with the apothecaries on their own ground and opened dispensaries. In 1703, the Royal College of Physicians took a step which was intended to circumscribe the activities of the apothecaries, but which had ultimately far from the desired effect. They prosecuted an apothecary, William Rose, for acting as a physician, and obtained a conviction. The Society of Apothecaries took the case to appeal before the Queen's Bench and the judgement was confirmed. The House of Lords however ultimately reversed the judgement and confirmed the right of the apothecary, or for that matter any person, to treat persons gratuitously, vide the Act of Henry VIII. (32).

The physicians, relatively few in number, had little time to devote to their dispensaries, and engaged dispensers to make up the prescriptions and to manage the pharmacies. These people, recognising the possibilities in this type of work, began to establish their own pharmacies.

At the same time there was a large number of apothecaries in the country districts who had served apprenticeships with apothecaries, but who had not proceeded to the Freedom of the Society of Apothecaries.

The growth of the new class is well illustrated by the business of Plough Court Pharmacy in London. Silvanus Bevan, apprentice of Thomas Mayleigh, 'having served seven years, . . . was examined, approved, sworn and made free'. (33). Having opened the pharmacy in 1715, he took into partnership his brother Timothy, a qualified apothecary, who had completed his medical studies at Leyden.

Also trained in this firm was William Cookworthy. He was never bound and therefore could never have been admitted to the Freedom of the Society of Apothecaries. Later Cookworthy established a pharmacy in Plymouth, Devon.

A peculiar facet of pharmaceutical practice at that time is the employment of Doctors of Medicine as dispensary assistants. Many academically qualified physicians sought to remedy their lack of knowledge of drugs and medicines in this way.

The apothecaries, having got a foot in the domain of medicine, wished to prevent any trespass into the fields of pharmacy, which they regarded as legally theirs. Over a number of years they sought legislation to achieve this, and after many attempts and failures, the Apothecaries' Act of 1815 was placed on the statute book.

This Act confirmed the apothecaries in their status as medical practitioners, but did not restrict to them the practice of pharmacy. It had, in fact, the entirely opposite effect, for the Act contained a clause to the effect, 'that nothing . . . shall extend ... to be construed ... to prejudice or in any way to affect the trade or business of a chemist and druggist in the buying, preparing, compounding, dispensing and vending of drugs and medicinal compounds.'

To complicate the situation yet further, the Act stipulated that the chemists and druggists could 'use, exercise and carry on . . . in such manner and as fully and amply ... as before the passing of this Act'. Since the chemists and druggists were

prone to give medical advice to those who sought it, the Act also confirmed them as medical practitioners.

The Chemists and Druggists joined themselves together in a Society, and obtained in 1843 a Royal Charter of Incorporation as the Pharmaceutical Society of Great Britain. The first President was William Allen, F.R.S., and the first Vice-President, C. J. Payne, a Licentiate of the Society of Apothecaries. (34).

The Pharmaceutical Society established in London their own School of Pharmacy, the first laboratories for the teaching of practical chemistry and pharmacy, the instruction in these subjects being taken from the hands of the apothecaries.

Two qualifications were established, one, the Minor for assistants, and the other, the Major, for pharmacists. These qualifications conferred no rights upon the holders. Protection of the titles 'Chemist and Druggist' and 'Pharmaceutical Chemist' was given by the Pharmacy Act of 1852, and another Pharmacy Act, that of 1868, restricted the acts of dispensing and the selling of poisons to those who held the Pharmaceutical Society's qualifications, but no restriction was placed upon the sale of medicines, nor has there been any such restriction to date.

THE SOUTH AFRICAN SCENE

When, on the 5th April, 1652, Jan van Riebeeck set foot on the shores of Africa, 'to establish a rendezvous on the shores of Cabo de Bona Esperance' (35), he had left behind him his profession of surgeon.

He had been, in fact, an apothecary-surgeon in the service of the Company, prior to his elevation to the status of 'koopman', a distinct financial promotion, since surgeons were minor officials, rating with cooks and bo'suns. (36).

For the duration of the Company's rule of the Cape, medical personnel were either imported or trained locally by apprenticeship. An example of the latter class was Pieter van Meerhög (1637-1667), who arrived as a 22 year old soldier,

and who was subsequently promoted 'onder-barbier' or junior surgeon (37), and ultimately to opper-chirurgyn.

The revocation of the Edict of Nantes (1655) brought an influx of Huguenot surgeon-apothecaries, who settled in the Berg River valley. Jean Durand (1669-1722) settled in Drakenstein, and Jean Prieur du Plessis (1638-1708) at Stellenbosch. Records still extant show that in addition to treating patients, these early surgeons sold medicines and indulged also in general trade. J. H. Richter, Colonies Chirurgyn at Swellendam kept a retail store (38), whilst Jesse Slotsboo superintended the brick kilns, as well as acting as surgeon to the forces. (39).

When the British forces took over at the Cape for the second time in 1806, the medical set-up came quickly under review. Lieutenant-Governor the Hon. G. H. Grey set up a three-man commission to investigate charges that 'a considerable number of persons officiate as Physicians and Surgeons who have never been properly educated' and that 'bad drugs and medicines are daily sold at exorbitant prices'. (40).

The Report of this Commission brought forth the First Medical Proclamation. This proclamation set up a permanent Supreme Medical Committee, before which all practitioners, physicians, surgeons and apothecaries were enjoined to appear, and to produce their diplomas, or to submit themselves to examination.

A list of those licensed to practise was subsequently published, as well as a list of those who had either withdrawn from examination, or had been rejected. A penalty of 500 Rds. was imposed upon those who practised without the Governor's licence, and apothecaries' shops were subjected to inspection at irregular intervals, bad drugs found therein being destroyed. In this the Cape proclamation followed old English law, but anticipated it by 50 years, in imposing some restriction upon the sale of poisons.

The proclamation was a temporary measure, and the Earl of Caledon, the newly arrived Governor, issued the Second Medical Proclamation on the 18th August, 1807, acting on the advice of the Supreme Medical Committee. (41).

By its terms, unlicensed practitioners were mulcted 1,000 Rds: and for a second offence, expelled from the settlement. Complete separation of medicine, surgery and pharmacy was aimed at. Physicians and surgeons were forbidden to dispense medicines, and apothecaries were forbidden, except in emergency, from offering medical aid.

All medicines coming into the Colony had to be inspected and approved, and a scale of fees was laid down for physicians, surgeons and apothecaries.

The authorities however realised that in the areas remote from Cape Town itself, it was impossible for any such separation to be made, and a class of 'Practitioners in the Country Only' was created, being free to act as physicians, surgeons or apothecaries.

Despite the terms of the Proclamation and the threatened penalties, multiple practice in Cape Town continued. Dr. F. L. Leisching, licensed as a physician, had his medical practice at 60 Loop St., but also operated a pharmacy at 61 Loop Street, without an apothecary's licence. Diederik Pallas, licenced as a surgeon, sine diploma, entered into partnership with P. H. Polemann as apothecaries. Many unlicensed persons continued in practice, and in the country areas quacks flourished.

The Supreme Medical Committee continued in existence, being particularly zealous in the inspection of apothecaries' shops, until Sir Rufane Donkin, the Acting-Governor, abolished it in 1821, instituting instead a 'Colonial Medical Inspector'. On his return the Governor, the 'tyrant Somerset' (42) appointed to this office, on the 22nd March, 1822, Dr. James Barry, who retained this post until it was abolished on the 28th October, 1825. (43).

Dr. Barry was most assiduous in his duties, and caused His Excellency to issue a Government Advertisement reminding merchants that their drugs must be submitted to inspection, to issue a new scale of fees for physicians, surgeons and apothecaries, and to Gazette 'Rules for District Surgeons'. (44). In the latter it was clear that the District Surgeon was to act as an apothecary and dispense medicines, despite the proclamation

of 1807. Indeed in some cases the apothecary was appointed to be district surgeon, even where a qualified and licenced physician or surgeon practised in the same area!

Eventually Dr. Barry persuaded the Governor to issue the Third Medical Proclamation, dated 26th January, 1823. (45). This stipulated that physicians applying for registration must have a 'Regular Diploma from an University or College in Europe' and that Surgeons and Apothecaries must produce 'such certificate as is usually required for these arts'.

The other provisions of this proclamation were much the same as before, with one cardinal exception. Article 5 prohibited any person but an apothecary from selling medicines under a penalty of 500 Rds. The intention was to protect the apothecary in his profession, but the proviso had no other effect than to unite all the merchants of Cape Town against Dr. Barry—and with the numerous other enemies he created for himself, to tumble him from office.

None the less the proclamation remained in force until 1830, when Sir G. Lowry Cole issued Ordinance No. 82. (46).

This created a Colonial Medical Committee, and repeated the same provisions as to registration of physicians and surgeons, but now required apothecaries to serve an apprenticeship of four years with a licenced apothecary, and to pass an examination before the Committee, again anticipating English legislation by more than 40 years.

The proviso forbidding merchants to sell medicines was not included in the new ordinance, and the apothecary was thus denied that protection in his profession which was accorded to physicians and surgeons.

Another medical ordinance appeared in 1836 over the signature of Sir Benjamin D'Urban, a most retrograde piece of legislation which was fortunately not approved by the Home Government, and the former law became re-operative, and so remained until 1891. (47).

Three examples of registrations effected under the various ordinances give an insight into the training of the pharmaceutical pioneers in the Cape.

Joachim Brehm, born at Bemberg in Bavaria on the 29th January, 1782, came to the Cape in 1816, to enter the pharmacy of Dr. Leisching. Although he practised as an apothecary, he did not apply for registration until 1820, in which year he was planning to practise in Uitenhage, of which district he eventually became Deputy-Sheriff.

The documents which he presented before the Supreme Medical Committee are still extant (48) and give a detailed story of his career. Seriatim, these documents comprise:—

- 1) A contract of apprenticeship, dated 24-9-1803, signed by Ernst Friederick Rumpf, Professor of Chemistry and Pharmacy in the Royal Bavarian College and practising pharmacist. The apprenticeship was to endure four years, and Professor Rumpf was to provide board and lodging (Brehm brought his own bed!), and to teach him pharmacology and pharmaceutical chemistry.
- 2) A certificate of discharge from his apprenticeship, dated 20-10-'07.
- 3) An extract from the Register of the Justice of the Peace of Durckheim-on-the-Flaardt, before whom Brehm had taken oath that he would well and truly fulfil the functions of a pharmacist, whilst in the service of 'le Sieur Bernhard'.
- 4) A document dated 6-4-'09, again from the Registry of the Justice of the Peace at Durckheim, before whom Brehm had taken oath, having completed his period as a 'provisor', to perform the functions of a Master Pharmacist.
- 5) A certificate from Tzubany, Court Pharmacist at Rastatt, that Brehm had served six months as an assistant, dated 26-9-1811.
- 6) A similar certificate from Gme Castan, Doyen of the Pharmacists of Nimes, attesting to a year's service, dated 30-9-1812.
- 7) A certificate from L. Geiht, the owner of a lehrapoteek in Strasbourg, testifying to two years spent as a pupil, dated 2-10-1814.
- 8) A testimonial by T. Pagenstecher of Bern, acknowledging one year of service as an assistant, dated 2-10-1815.

On the basis of these documents, Brehm was duly registered as an Apothecary, Chemist and Druggist.

Charles Friedrich Liesching was the second and South African born son of Dr. F. L. Leisching, and was apprenticed to him in his apothecary's shop from 1st January, 1814, to 31st December, 1818, as certified in a document dated 12th April, 1824, presented with a petition to the Governor, Somerset. Since according to the various medical ordinances dual practice was forbidden, and since old Dr. Liesching was not duly licenced as an apothecary, the certificates had no legal basis. (49).

The petition for the grant of a licence as an apothecary was referred by the Governor to the Colonial Medical Inspector, Dr. James Barry, who returned it writing, 'Mr. Liesching has not had any professional education, consequently no regular documents, it becomes impossible for me to recommend Mr. Liesching to be allowed to practice'.

The Lieschings did not however accept this fiat. More petitions, an attempt to see- the Governor, lengthy correspondence involving the Acting Colonial Secretary, P. G. Brink, the Chief Justice Sir John Truter, the Fiscal, D. Denyssen, and the Secretary to Government, resulted in an order from Lord Charles to Dr. Barry that an examining Board be convened.

Dr. Barry convened a Board comprising Dr. Samuel Bailey, and P. H. Polemann and J. H. Tredgold, Apothecaries. They certified that they had examined his documents and 'it by no means entitles him ... to practice as an Apothecary, Chemist and Druggist'.

The choice of the members of the Board was to say the least unfortunate, for the two latter members had both been registered without any 'regular documents', a fact which did not escape the legal officers of Government. In supporting this certificate, Barry wrote: "The Apothecary, chemist or druggist . . . should be considered the most important branch of the Profession . . . Physician, Surgeon and Patient are totally at (his) mercy".

The affair ended by the Secretary to the Government, Sir Richard Plaskett, convening a proper examining Board, before which Leisching duly appeared, passed his examination very creditably, and was duly registered on November 1st, 1825.

For Dr. Barry the affair ended in the abolition of his post of Colonial Medical Inspector, and in his resignation from all his civil posts, and the loss of the protection of Lord Charles Somerset. The close relationship between the so-called 'Kapok' doctor and Lord Charles has never been given satisfactory explanation.

John Thomas Pocock, another pioneer pharmacist at the Cape, was born on December 12th, 1814, in London, and was apprenticed to Mr. Carter, a Surgeon, on December 17th, 1829, to learn the 'art and mystery of a Surgeon, Apothecary and Accoucheur'. (50).

Master and apprentice arrived in Cape Town on December 18, 1830, having journeyed thither via Australia. Mr. Carter opened an apothecary shop at 8 Burg Street, Cape Town, and here the young apprentice learned medicine, surgery and pharmacy. He applied for registration after his apprenticeship terminated, on the 3rd January, 1837. In his Diary he records, 'saw Dr. Bailey .. . who mentioned that the Committee objected to Mr. Carter's testimonial, because he was not practising as Chemist-Apothecary'.

However, despite this objection, the Committee duly registered him as Apothecary, Chemist and Druggist on the 11th January, 1837.

Further attempts at medical and pharmaceutical legislation were made from time to time, but met with little success. A Bill introduced into the House in 1856 was referred to a Select Committee, which ultimately reported that the Bill required amendment to give more protection to the pharmacist, the proposal being that traders should not be allowed to sell medicines. Strangely enough, by modern standards the medical practitioner was to be given the right to operate a pharmacy, provided none existed in the immediate area.

The Report of the Select Committee did not come before the House before it prorogued, and was not re-introduced at subsequent sessions.

Later attempts to introduce new medical laws failed, but stimulated the formation of organised bodies of pharmacists, The South African Pharmaceutical Association at King William's Town in 1885, and the Cape Pharmaceutical Society in 1887.

A Bill was laid before the House in 1891 and subsequently became law. It created the Colonial Pharmacy Board as the governing body for pharmacy, the Board consisting of three elected and two nominated chemists and druggists.

Aspirant pharmacists were required to serve a four-year apprenticeship and to pass an examination, the examining Board being peripatetic. The Act further controlled the sale of poisons and introduced the Poisons Book as the pharmacist's record of sales. It was also deemed expedient to create the Poisons Licence, by which general dealers were enabled to sell poisons.

Doctors who wished to compound prescriptions were required to take out a licence, a proviso which was repealed by the 1899 Amendment Act. Thus once again the pharmacist was denied that professional protection which is given him in Europe.

Although pharmacists were required to pass an examination, and although the Pharmacy Board recommended that candidates should attend 'at least a three months' course under a regular professor of chemistry', no schools of pharmacy existed.

The first tuition provided was in the form of gratuitous instruction given in Cape Town by W. F. H. Pocock. This pioneer teacher was apprenticed to his uncle in Cape Town, proceeded to England to qualify, which he did from Muter's School of Pharmacy, passing both the Minor and Major examinations in 1878, and gaining a Bronze Medal in Chemistry. (51).

The legislation of the four provinces was fused into the Medical, Dental and Pharmacy Act of 1928, the four Pharmacy Boards giving way to the South African Pharmacy Board.

The only path to the Register of Chemists and Druggists was for many years by way of the Diploma in Pharmacy,

granted by the South African Pharmacy Board after examination. The standard of the examination imposed by the Board has been advanced from time to time, to keep abreast of overseas training, and in 1955, the regulations were amended to permit of university education in pharmacy. Six schools of pharmacy now exist, four being at Technical Colleges with training for the Diploma, and two being at Universities, granting a registerable degree in pharmacy.

THE GOLDEN AGE OF PHARMACY

Almost simultaneously in Europe and in the United States of America, pharmacy began to develop from an art into a science.

During the 19th century, pharmacy was concerned mainly with the creation of standards for medicines and foodstuffs (51), the devising of various dosage forms, the so-called galenicals, and the investigation of the chemistry of the plants used empirically in medicine.

The task of creating galenicals from drugs was not always a simple matter. Ergot, introduced into medicine in 1808 (53), defied all attempts to make an active preparation until 1932.

Pharmacists did not direct all their activities into pharmaceutical channels solely, but contributed largely in the realms of natural philosophy. The names of Balard, Beckman, Buchner, Dobereiner, Dumas, Klaproth, Trommsdorff, and those of Pelletier and Caventou are indelibly written in the history of pharmacy. (54).

Towards the end of the 19th century, the synthetic age was born, and pharmacy had perforce to turn its attention to the development of assay processes for the new chemicals, and to the creation of rigid standards of purity, for many of the associated by-products of the chemicals were either highly toxic, or had vastly different pharmacological properties.

The creation of new dosage forms was given special attention. The tablet and the capsule were devised, some modified to pass through the stomach, and release their contents in the small intestine. New forms of application were developed

from which the medicament could be absorbed across the skin barrier.

The injection type of medication came into being and was given much attention. From the simple subcutaneous injection first introduced, pharmacy has progressed to the intravenous, intramuscular, intrathecal, intraperitoneal and other types.

After the First World War attention became centred on the synthesis of derivatives of the known synthetic remedies, and on the derivatives of the active principles of plants.

Precise evaluation of the therapeutic properties of the multitude of new products engendered the birth of pharmacology as a pure science, and pharmacological research became centred mainly in the Schools of Pharmacy, or in laboratories created or sponsored by pharmaceutical manufacturers. Some 75 per cent, of all new remedies introduced to medicine are created in these laboratories. (56).

Ninety per cent, of the medicines in use today were unknown in 1930, and this multitude of new and varied medicinals has brought a radical change in the training of the pharmacist.

Today the complete pharmacist must be a combination of chemist, chemical engineer, pharmacologist, biochemist and bacteriologist. In countries other than South Africa, undergraduates in pharmacy tend to divide themselves into two groups: the one group taking the ordinary degree chooses the life of the general practitioner of pharmacy, the other, by way of the honours degree, tends towards specialization.

In South Africa, with its limited number of pharmacy students, the majority of graduates will tend to become general practitioners, a relative few pursuing the extra year of study for the honours degree. With the expansion of the pharmaceutical industry in South Africa, and because of the ever increasing growth and complexity of the medicaments used, it is inevitable that the degree course must be lengthened to four years within a very short time, and that apprenticeship must be replaced by a post-graduate internship.

What is the function of the pharmacist to be in the future? This subject has been long and earnestly debated in pharmaceutical circles the world over. (56).

It is clear that the education given the aspirant pharmacist must be such as will enable him to exercise his profession in the industrial field, in the hospital pharmacy, or in the retail pharmacy. His studies in chemistry must continue to equal if not surpass those of the ordinary science graduate, and emphasis must be laid upon organic synthesis, and upon analysis, with special stress upon instrumental analysis.

He must become an adequate pharmacologist, with a sufficient mastery of statistics to enable him to make a rational plan of work and to interpret the results. Bacteriology, the principles of sterilization and disinfection will continue to hold their place in the educational programme, and the established subjects of pharmaceutics and pharmacognosy will be modified in accordance with modern needs.

Research fields will be mainly those of organic synthesis, pharmacology, bacteriology, the investigation of the chemistry of South African flora, and in the newer domain of biopharmaceutics. (56). The latter subject deals with the study of the relationship between the chemical and physical properties of drugs and its dosage forms, and the biological effects following administration of those forms.

How will the retail pharmacist fit into this scheme of things? His area of operations will be that of consultant in pharmacology to the medical, dental and veterinary professions, offering an unbiased evaluation of the new drugs as they appear. He will function as a health consultant to the community and as a source of supply of the medicinal agents used.

The retail pharmacist will continue to act as a protective barrier to the public and to control the supply and distribution of dangerous chemicals and poisons.

In order that the retail pharmacist may develop along continental lines, in order that he may use his technical knowledge to the full, in order that he may exercise his profession in dignity and honour, he must be given that same protection

which is accorded all other professions—nay trades even—in South Africa.

When the retail pharmacist no longer has to subsidize his professional activities by the sale of goods foreign to a pharmacy, then and then only will he be able to take his rightful place in the community as a full-fledged member of the medical professions. Then only will he be able to make that contribution to the development of South Africa of which she stands so much in need.

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