WHO DOES THE WORK? A SURVEY OF ANAESTHESIA IN THE UNION*

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'O wad some Pow'r the giftie gie us
To see oursels as others see us!
It wad frae mony a blunder free us,
And foolish notion.' *Robert Burns*

One of the greatest impediments to the development of civilization is the difficulty of communicating our own ideas and wants to others, or of understanding the ideas and wishes which others desire to communicate to us. This difficulty, enshrined in the story of the Tower of Babel, does not only obtain between races speaking different tongues, but also shrouds men and women who speak the same language. They may be unable to express their thoughts with sufficient clarity for their hearers to understand them or else their conception of the meaning of a word or phrase may be at variance with that of their audience.

Swelling this disability to gross proportions is that element of scepticism which, unless exercised judiciously in relation to all statements which do not accord with reason and common sense, makes of us credulous fools, but which also tinges with unwholesome disbelief or obstinacy our acceptance of any information which, however correct it may be, if taken at its true value might adversly affect our own interests. Thus, in the field of medicine, the general practitioner does not wish to acknowledge that the exercise of a particular diagnostic or therapeutic aid might be beyond his capabilities, while the specialist is too often loathe to concede that certain commonly performed acts falling within his own sphere are yet of such simplicity that the general practitioner might safely undertake them.

To me it seems particularly important that the teaching members of the profession should avoid the pitfalls of blind dogmatism, and should endeavour to lead their pupils along a surveyed path which would best serve the interests of the public. The great advances in the medical and allied sciences have tended to obscure the basic aim of the medical profession which has been, and should always be, service to our fellowmen in the very broadest sense of that word, not in the restricted one of treating a single symptom or disease entity as it arises. In planning such a service a map is needed and in the development of human affairs the map must always be incomplete; based upon known history but extending into the unknown future along broadly defined paths which cannot be followed to their ends by the eye alone but must be laboriously trodden in creating further history to the end of time. Original work strikes out into the unknown, blindly seeking a goal in the mists of ignorance and sometimes luckily finding one. *Research*, as the word implies, is rather the minute re-examination of the past in order to unearth facts lost or overlooked which may help to chart a road into the future.

Viewed in this light it is apparent that to plan and speculate upon anaesthetic services in the future will depend to a very large extent upon information which the immediate past can supply. I was most fortunate in being able, through the grant of a Cecil John Adams Travelling fellowship by the Trustees, and of the necessary leave by the Provincial Administration and the University, to spend much of 1958 in

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examining the immediate past history of anaesthetic services in the Union and in South West Africa. My studies were aided immeasurably by the courtesy, the assistance and the encouragement I received in all walks of the medical profession and in particular from the general practitioners, and are here set forth.

As in all academic work, I sought the answers to several questions and, as in all such seeking, I found that the questions I posed could not be answered precisely because of the host of allied questions which they dragged into sight. Here are the questions:

1. How many anaesthetics are administered in South Africa in one year?
2. What proportion of these anaesthetics is administered by doctors who are not specialist anaesthetists?
3. What anaesthetic tenchiques do these non-specialist anaesthetists practise?
4. Under what circumstances do these non-specialist anaesthetists work?
5. For what types of surgery are these anaesthetics given?

And immediately yet another question had to be answered: 'How are these questions to be answered?' Two ways lay open to me and I explored both.

Official Statistics

Although there is no agency to which statistical data concerning anaesthetics must be reported by all hospitals, in this country by far the greatest number of hospitals are either owned by the several Provincial Administrations or else are subsidized by them. In the latter group fall hospitals of 2 types—mission hospitals and private hospitals. As a condition of subsidy both these types of hospital are required to report on the number of operations performed annually on their premises and this information is also collected from the ordinary Provincial hospitals. Since almost every operation is performed while the patient is under the influence of some type of anaesthetic it is reasonably safe to presume that the statistics related to operations can be extrapolated to give an acceptable figure for the number of anaesthetics. But there are other hospitals in which surgery is performed, notably unsubsidized private hospitals and nursing homes, as well as mine hospitals. Also a not inconsiderable number of anaesthetics are administered in maternity hospitals as well as in the offices of dentists and doctors and even in the homes of patients. A very large proportion of the latter are probably local anaesthetics but these, like general anaesthetics, carry a hazard and deaths in the dentist's chair are certainly not unknown.

From the offices of the Hospital Services in the 4 Provinces in the Union as well as that in South West Africa, and with the consent of the several Directors of Hospital Services, to whom I tender my thanks, I collected statistics relating to all Provincial hospitals and subsidized hospitals. To these, as a result of direct approaches, I was able to add the statistics from almost all the mine hospitals and the majority of the private hospitals in the Union. All statistics related to the year 1957 and from a total of 308 hospitals there were reported 385,667 operations. This figure does not include work done in maternity hospitals and when extrapolated to give figures for anaesthetics it excludes also all anaesthetics given in doctors' and dentists' offices and in patients' homes. If all these were added in the total would very obviously far exceed 385,667. But by how far?

Individual Sampling

At the beginning of 1957 there were 7,198 medical practitioners on the registers of the South African Medical and Dental Council. Some of these doctors reside outside the country and 115 of them are specialist anaesthetists who are specifiically excluded from this study. Within the 791,000 square miles of the Union and South West Africa the remainder serve a population of 13,083,000. Fifteen large urban areas, each with a population exceeding 75,000 (all races) together hold 27% of the total population (3,526,000 of all races) and were served in 1957 by 1,131 specialists and 3,045 non-specialist practitioners. The remaining 9½ million people were served by 89 specialists and 2,440 non-specialist practitioners.

Of this total medical force, more than 5,000 are members of the Medical Association of South Africa and with the aid of this organization I was able to despatch 4,982 circulars asking for specific information along the lines of the questions I have set out above. I received over 930 replies, a response (roughly 19%) which I felt was unusually good for this type of enquiry and indicated a wide interest in the subject of my study. Not unnaturally, perhaps, the response from the non-urban (country) practitioner was somewhat better than that from the city practitioner. Had I been able to make use of the facilities possessed by the Medical Council itself, I could have limited the population I sampled much more rigorously, for a relatively large proportion of the city replies were from specialists other than anaesthetists. I was left, after winnowing the replies, with 770 replies to be analysed, 358 of them from non-urban practitioners.

Well over 70% of these replies indicated that their senders had administered anaesthetics during 1957 and contained estimates of the volume of work undertaken. If these responders constitute a representative sample of the whole medical population (excluding all specialists) then, by extrapolation, in the country as a whole, at least 887,240 anaesthetics were administered by non-specialist anaesthetists in 1957. This great figure suggests that 7% of the population receive an anaesthetic each year. As a check on the validity of this figure, compare it with the estimate of 4·7% of the population of the USA which was subjected to surgical operations in 1950.

A specialist anaesthetist administers, on the average, 1,000 anaesthetics per annum, so that an estimated 115,000 anaesthetics were administered by specialists in 1957. If this figure is subtracted from the known total of hospital anaesthetics the remainder, represent the work done by non-specialist anaesthetists, is more than 70% of that total, and a correspondingly greater proportion of the estimated total based on the sampling of the medical population. It is doubtful, however, whether the number of non-specialists who are actively engaged in giving anaesthetics is very much more than 20-30% of the 5,826 non-specialists on the Medical Register. If this is so, the replies do not constitute a representative sample of the medical population and the estimate based upon them must be adjusted downward in consequence. But if only 23% of the medical population (non-specialist) are actively engaged in administering anaesthetics the adjusted figure is in the vicinity of 295,000 anaesthetics in one year, leaving a total of about 25,000 anaesthetics not accounted for by the hospital statistics and thus repre-

senting the volume of work done in maternity hospitals, offices and homes.

In point of fact, nearly 40% of the work done by non-specialists is in the field of local anaesthesia, most of this probably being for the 24% of anaesthetics which were undertaken in offices and homes, although it was apparent from the replies that a certain number of general anaesthetics are still administered in situations far removed from hospitals. A survey of dental anaesthesia would increase both the figure for local anaesthesia and the figure for extra-hospital anaesthetics.

While nearly all the local anaesthesia will have been for minor surgery and most of the general anaesthesia as well, there is a considerable volume of work done for major surgery and obstetrics. Here again the country practitioner is more likely than his city colleague to anaesthetize for major surgery, and to do so more frequently. Nearly 50% of the city practitioners who replied never gave anaesthetics for major surgery, while only 17% of their country counterparts were able to escape this chore.

The answers to 4 of the 5 questions have now been discussed and together they hint at the answer to the query regarding the circumstances under which these anaesthetics are given. The majority of the work is done in hospitals of various sizes and types. There is really only one way to find out what these hospitals are like; but the map in Fig. 1 shows the places from which answers to my questionnaire were received

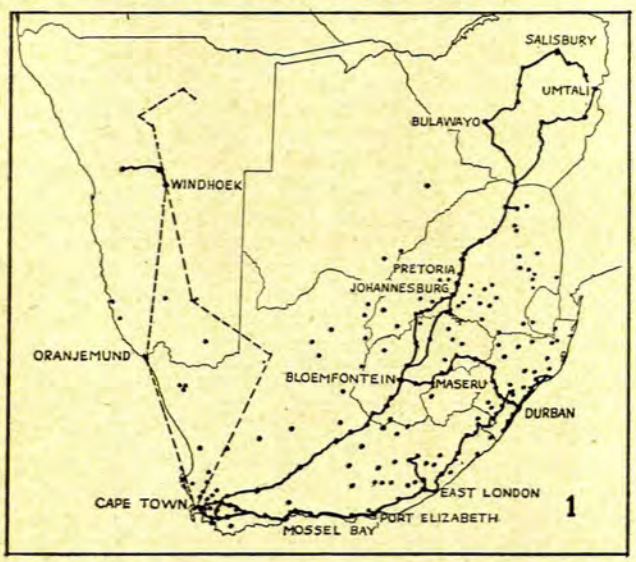

Fig. 1. Map of Southern Africa. Dots show places from which replies to questionnaire were received. Author's route shown by broken (air route) and bold unbroken lines.

and it is obvious that I should be very hard pressed to visit each one in a limited time, however much I might wish to. The map shows my journeys by car and by air (the latter of course as straight as the crow flies) and at almost every point I was able to talk with local practitioners or visit the hospital or in some such way acquire an idea of the conditions under which anaesthesia was practised in the vicinity. Our national roads have made a great impact upon life in the country. Villages are becoming towns and towns are growing into cities and everywhere, either through the efforts of the townsfolk alone, or with Provincial aid or by the Provincial Hospital Authorities themselves, new hospitals are being built and existing hospitals improved and expanded. My tours were made after a period in the UK, and in my opinion as far as requirements for anaesthesia are concerned, our hospitals, in whatever corner they may be, are better equipped than one would expect and certainly as well equipped as most of the hospitals I saw overseas.

It is right that this should be so, for it is economically impossible for even the relatively well paid white-collar worker to transport himself or a member of his family great distances to seek surgical aid of the simpler sort. Life away from home is always expensive, besides being lonely, which is an important consideration, especially for children. If the patient in a far centre is to see a familiar face regularly, he must take that face with him and install its owner in lodgings while he himself is in hospital. If his companion is his wife, who is to look after the children at home while the parents are gone? We must be very careful not to sacrifice the individual to efficiency, just as we must be careful not to expose him to death from neglect in far and forgotten places. For in the field of anaesthesia, to know what is the practice in the country as a whole is not merely of academic interest, or of practical interest only to the teacher in the ivory tower of the University. It is of intense practical importance to the nation as a whole.

At Groote Schuur Hospital the mortality rate associated directly with the administration of anaesthetics during the years 1956, 1957 and 1958 was of the order of 1 death per 2,000 anaesthetics. This compares favourably with figures reported from overseas, but if the anaesthetic mortality rate of the country as a whole is in any way comparable then among the 385,667 patients who were operated upon in 1957 there were *at least* 200 *who were killed by the anaesthetic which they received.* Death due to anaesthesia is a public-health problem of great magnitude. A mortality rate of this order would be a matter for grave concern if it were associated with an outbreak of diphtheria, typhoid or poliomyelitis. Yet this loss from anaesthetics occurs annually and is increasing.

It will never be possible to reduce the mortality rate of anaesthesia to zero, for anaesthetic deaths are always due to error—not always to culpable error by any means, but man is fallible and can tire with overwork and is always liable to error. Only by ceaseless vigilance and an infinite capacity for taking pains can error be reduced to a minimum, and there is need for the development of simpler methods and a better understanding by the anaesthetist, not only of his agents and the way to use them, but of his patients and of himself. Complexity is not the answer, for then there are more things to watch so that the watcher tires earlier. There are also more things to go wrong.

While research in all aspects of anaesthesia is important, particularly research conducted in the light of the country's conditions and requirements, education is vital and my studies will have been well worth while if as a result the magnitude of this problem is better realized and it is attacked by those responsible for developing medical services for the people of South Africa.