TEACHING

By W. M. MOLLISON (London)

THE functions of a hospital are twofold: Practice of the healing art of medicine and surgery and Teaching that art to those that shall carry on the work not only here, but in all parts of the world. This applies not only to general medicine and surgery, but to hospitals dealing with Ear, Nose and Throat. Not unnaturally the latter is the subject of this paper: though its theme is Teaching; actually teaching and practice of medicine cannot be divorced.

The value of sound and discriminating teaching cannot be over-estimated, particularly when one contemplates the enormous expansion of learning and the large output of literature in all branches of medicine which needs to be assessed at its proper value.

From the nature of things, teaching must go back to the dim past; in search of inspiration one turns first to Hippocrates.

The Greeks of the fourth and fifth centuries B.C., shortly before Hippocrates, were certainly remarkable people; they had created philosophies, had achieved an unsurpassed art and architecture, and their religion had much that was fine—but their medicine was primitive.

Hippocrates is rightly called the Father of Medicine, and when one considers the difficulties he must have had to combat one can have nothing but admiration for him.

He dragged medicine out of the arms of mysticism and temple worship; this he did by teaching observation; not only of the patient and his symptoms, but of surroundings; at that time, knowledge of anatomy was rudimentary, of physiology almost nil and of pathology minute, which made his task no easier.

Hippocrates in establishing his medical school had much to contend with, notably the health establishments run by the adherents of Aesculapias; and multitudes of quacks, as they would be called to-day. In his words " just such persons

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

as the conjurors, purificators, mountebanks and charlatans now are, who give themselves out to be excessively religious and as knowing more than other people ". Physicians were apt to be shunned, just as they are to-day by some ; but, in view of the treatments then in vogue one has some little sympathy with the patients who avoided their ministrations.

Certain of the Temples had an eye to business as well, exploiting the healing properties of the god Aesculapias. There was at Epidaurus, for instance, a magnificent theatre and gymnasium for entertainments, also a solarium. This occupational therapy *de luxe*, as it may be called, was no doubt of great value ; nowadays, after a period of eclipse, this occupational therapy has come into its own again, though in a somewhat different form.

The priests too undertook some crude surgery, and kept serpents (in a special reptilliary) who were allowed to glide among the patients and lick the wounds.

Many of Hippocrates' writings and sayings are most illuminating and modern. In *Of the Epidemics* he wrote : " The physicians must be able to tell the antecedents, know the present, and foretell the future—must meditate these things, and have two special objects in view with regard to diseases, namely, to do good or to do no harm.

" The art consists in three things—the disease, the patient and the physician. The patient must combat the disease along with the physician. . . The physician's lack of success comes from seeing diseases not patients. . . . That medicine is an Art which considers the constitution of the patient and has principles of action and reasons in each case."

Compare this with the modern view expressed by Alexis Carrel in *Man the Unknown* :

" The physician's rôle is to discover the characteristics of the sick man's individuality, his resistance to pathogenic factors, his sensitivity to pain, the value of his organic activities, his past and his future. He ought to be able to give a precise analysis of the organic, humoral and psychological personality of this individual." Really a remarkable parallel.

Hippocrates had to combat old traditions : in very much the same way as in modern times when the written word is apt to be regarded as truth, though it too rests on tradition and has appeared unchanged in successive textbooks.

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

Teaching

As an example of the masterly way in which Hippocrates overturned one tradition, his words about the "Sacred" disease—(epilepsy), may be quoted: "it appears to me to be nowise more sacred than other diseases, but has a natural cause from which it originates like other affections. The notion of its divinity is kept up by their inability to comprehend it: that many other diseases which might be called divine for the same reason; the quotidian, tertian and quartan fevers seem to me no less sacred and divine in their origin than this disease, although they are not reckoned so wonderful."

He is scathing in condemning the quack's treatment of the sacred disease: "These people as part of their treatment forbid sleeping on goat-skins or wearing it," but Hippocrates points out that "none of the Libyans ought to be free of the disease as they all sleep on goat-skins, live upon goat-flesh, and that they have no robes, shoes or couches other than of goat-skins."

Körner collected all Hippocrates' writings on the ear and throat. Really some of his observations were remarkable. Here are a few:

"Sound in the ear only, is a confused noise, not until it gets to the brain through a hole in the *Dura mater* is it understood."

"Through the brain we think, understand, see and hear."

"Deafness is common with a south wind which came from the sea and was therefore moist and is made less by the dry north wind"; this, no doubt, referred to cases of middle-ear catarrhal deafness.

The connection between the throat and ear was recognized: inflammation of the tonsil was recognized to affect the ear of the same side.

Actually he came near to the diagnosis of adenoids. He noted the combination of otorrhœa, headaches, high-arched palate and irregular alignment of the teeth; and that this syndrome was more commonly in those with narrow long heads and faces.

It has since been shown that adenoids are more common in *dolichocephaly*.

He also noted that the symptoms of pain and cerebral irritation were relieved by discharge from the ear.

That the discharge of acute otitis media was not foul, while that of chronic disease was foul.

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

W. M. Mollison

Hippocrates showed himself one of the great few that manage to break away from tradition and become the real Teachers of all.

Carrel writes: "Humanity never gained anything from the efforts of the crowd. It is driven onward by the passion of a few abnormal individuals (? geniuses) by the flame of their intelligence, by their ideal of science, of charity and of beauty."

This statement applies to medicine (or surgery) in peculiar degree.

There have been many remarkable men down the ages who may be spoken of as geniuses: Galen whose flame burned for hundreds of years, Harvey, the Hunters, Cheselden, Percival Pott, Astley Cooper, Surgeons of the Edinburgh School, to mention only a few: then came Lister whose discoveries were so tremendous that a new era of Surgery was initiated; not to mention Simpson and anæsthetics.

We are perhaps too near to assess the modern geniuses; or do we think that the general standards of learning to-day are so high that the genius must have even greater character and be more abnormal to shine above his fellows?

Evolution of Teaching

Teaching has gone through several phases. Hippocrates took pupils at a fee and this pupil-system lasted for centuries; later it developed into the apprentice-system—students were assistants to general practitioners.

In course of time centres of learning arose, called universities, where lectures were given and tended to replace in some degree the apprentice-system. The "Lecture" was such a feature that it has been perpetuated in pictures by famous artists.

I do not propose to trace the evolution of teaching and teachers of surgery, this has been done in a masterly way by Harvey Graham in *Surgeons All*; but I should like to mention his remarks about one man, John Gaddesden, one of the three men who may be looked on as having founded English Surgery in the fourteenth century. He studied at Oxford and qualified without having seen a patient apparently. He then developed a large practice in London and wrote his book, *Rosa Anglica*, one Section of which was entitled "Disagreeable Diseases which doctors can seldom make money by". To-day we should substitute—which bring no credit to the medical profession.

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

Teaching

Taking a large step, we come to the eighteenth century. Percival Pott instituted, among other things, a series of lectures at St. Barts., 1765 ; and I find his epitaph, 1788, very apt for an essay on Teaching.

Surgeon of St. Bartholomew's Hospital—during forty-two years.
He scorned to teach a Science of which he had not traced the growth—Learn reader that the painful Scholar can alone become the faithful teacher—while he gathered the knowledge of his predecessors, he perceived their errors and corrected them ; he discovered their defects and supplied them.

In comparatively recent times the lecture was greatly expanded : and came in for criticism. Dr. Brown expresses this criticism in 1856 in " Rab and his friends ". " The abuse of huge classes of mere hearers of the law under the professor has gone, I hope to its utmost, and we may now look for the system breaking up into bands of doers acting under the master." A forecast of modern bedside teaching.

In spite of criticism the lecture system still persisted at Medical Schools, but now owing to the good modern textbooks routine lectures have largely disappeared ; perhaps unfortunately, for the few who have auditory memories. On the other hand lectures given by experts on their special subjects may have a high value.

Bedside teaching which in many schools took the place of lectures, has been more highly developed in this country than elsewhere.

Osler emphasized the importance of bringing the student and patient into close contact and insisted that there should be " not the cloudy knowledge of the amphitheatre but the accurate critical knowledge of the wards ".

What is Teaching ?

Essentially handing on the power of observation and the results of observation, which is called experience.

In reply to a question of how he taught a new subject, a Danish teacher said that in a sea of ignorance he planted small islands of knowledge which grew to big islands and, eventually, coalesced into countries and continents. Perhaps in medicine this idea may be expressed in a slightly different way, which has a more technical appeal.

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

W. M. Mollison

Let us compare the student's mind to a plate of culture medium, on which teachers plant germs of knowledge here and there; the colonies will expand and meet one another; but the way in which the colonies expand depends on how they are planted, and the rate of growth depends on the medium, whether kept in the proper atmosphere and warmed to a seemly enthusiasm. The teacher must try and plant his teaching in an attractive way; and his subject should be to cover the plate uniformly; to avoid leaving bare patches, or one side overcrowded. Subsequently, the student himself may take a subculture and examine it and grow it in different ways: this self-teaching is really the path to research.

We need teaching which is bound up with observation.

Is the power of observation decreasing? It has been said that increase in education has lead to diminution of observation. Carrel is very caustic, he writes: "Unintelligence is becoming more and more general in spite of the excellence of the courses given in schools, colleges and universities." There are, too, so many opportunities for easy and cheap entertainments that many fail to make any attempt at self-entertainment and self-teaching.

In general medicine to-day observation of the patient tends to be swallowed up in investigation because medicine has received such enormous assistance from all ancillary subjects and workers therein, that it tends to become a science rather than an art, and it becomes increasingly important to avoid losing sight of the patient in his disease, a warning given by Hippocrates.

In our own sphere of medicine Hinton was a striking example of an astute observer and thinker. His friend, Sir W. Gull, wrote—"Hinton was not a man of science, but a philosopher. Science to him was the servant of philosophy" in spite of this he forced himself to become a good aural surgeon.

Formerly physicians and surgeons had more leisure, because knowledge was so much less and the laboratory worker and researcher are modern developments.

Owing to this great development the student has to assimilate vast stores of knowledge through reading and special investigations, so that he has less leisure than he had even twenty years ago, but he should devote that leisure to the best advantage in educating himself; perhaps he is in a happy

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

position compared with the large bulk of the population who are apt to spend their spare time in useless occupation at cheap entertainments of which the cinema is easily first.

An alternative method of helping the student lies in cutting down the amount of work but this involves us in the vexed question of the overburdened medical curriculum, and leads well-nigh to madness. One of our colleagues recently suggested a drastic reduction of the student's burden by cutting out obstetrics from the qualifying examination.

In whatever direction pruning of the curriculum occurs it should not be applied to ear, nose and throat work ; which is indeed being recognized more and more as a most valuable part of the student's education, and for this reason the teaching of it is vital.

In its early days, the general surgeon was scornful of the speciality. Abernethy, who followed Pott at Barts, when asked if he would become President of the London Eye and Ear Infirmary, 1790, refused in no uncertain words : " I can see no good that can arise from this to the Public : it may be of use to the surgeons, but I candidly tell you I consider it quackery. I will never lend my name to sanction it; every surgeon should be acquainted with the disease of the organs of sight and hearing ; and to detach them from general surgery would be not less injurious to the science than oppressive to the public."

We all know that Bart's has always been a rock of sound conservatism in a sea of hot-headed progress.

However, in spite of Abernethy, ear specialists did arise. Now otology and laryngology are firmly established and have proved themselves extremely useful to their senior colleagues Medicine and Surgery. Those practising the speciality have evolved on sound lines. Many were physicians first, and even more were Scotsmen ; and Plato said, " it would seem that the direction in which education start a man will determine his future life ".

After reviewing however inadequately the evolution of teaching let us turn to *The Teacher.*

The Teacher

Osler said : " The function of a teacher is to propagate the best that is known and taught in the world ; he must also be a practitioner and professor of his art." He stated

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

that "Teachers must have *enthusiasm*". I should add *perseverance*, since they have to repeat again and again what are to them common-places, but to the student exciting and newly acquired knowledge. They must have *knowledge* obviously; *a sense of obligation* to add to knowledge—this can be done through teaching or writing. There are those that feel there is nothing new under the sun and that to write of things is worthless, and indeed savours of self-aggrandizement; but it must be remembered that much that was once known tends to be forgotten and perhaps in the most hackneyed writing one little statement may throw a new light on a subject and open up a chain of thought in the reader, which in its turn may lengthen and strengthen the chain, and lead to more knowledge. Osler added:

"Further, the Teacher must keep himself *au fait* with all modern thought to avoid burdening an already overladen literature with faulty and crude observations."

Barclay, a leading anatomist of the nineteenth century, expressed the importance of avoiding redundant observations in the following words to his students:

"Gentlemen, while carrying on your anatomy work in the dissecting room beware of making anatomical discoveries and above all beware of rushing them into print. Our precursors have left us little to discover.

"Anatomy may be likened to a harvest field. First come the reapers who entering upon untrodden ground cut down great store of corn from all sides of them. Then come the gleaners, who gather up ears enough from the bare ridges to make a few loaves of bread. Last of all, come the geese who still continue to pick up a few grains scattered here and there among the stubble and waddle home in the evening, poor things, cackling for joy because of their success! Gentlemen, we are the geese!"

After this it is pleasant to turn to Carrel's words about teachers of medicine. "A professor of medicine differs from all other professors whose subjects have limits (Anatomy, Physiology, etc.) in that he must acquire an almost universal knowledge. In addition, he needs sound judgment, great physical endurance and ceaseless activity." These words apply equally to one who professes our branch of medicine.

The teacher of otology and laryngology is in a peculiar position; though his area is small compared with the rest of

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

the body, it is of great importance as affections of it are seldom local diseases only, but expressions of general affections. After all, the mucous membranes of the upper respiratory tract are the surfaces through which many infections enter. Some general diseases have their earliest manifestations in the throat.

The observer has therefore to be alive to apparently slight changes in the appearances of the nose and throat.

In other words exactness of observation is essential; and as we have already agreed this is the basis of teaching medicine. The use of a mirror with a good beam reveals things that cannot be seen otherwise, and this intimate revelation to the student tends to make him find conditions which he feels must be pathological, but which really are normal.

It is for the Teacher to instruct therefore in the normal in the first place.

I have always suggested that 70 per cent of the art of laryngology rests on the skill in using the mirrors and specula, 20 per cent on experience and 10 per cent on knowledge, but I can imagine some disagreeing acutely with these percentages.

Laryngology is very lucky—it is largely self-sufficient; ancillary services are naturally of the greatest help, but I still venture to suggest that the accurate observer can reach a diagnosis in nine cases out of ten without them; this is very much the reverse when it comes to treatment.

Perhaps as a result of skill in using our means of examination and some previous experience we tend to become careless, developing a sense of self-sufficiency and a law unto ourselves: we pride ourselves on acuteness of observation, with accumulation of observations there is perhaps a tendency to breed *diagnosis* by intuition out of experience; but this tendency must be subdued lest our pride leads to a fall into error and wrong deduction.

Teaching is in a sense apart from education: education is the acquiring of knowledge which can be culled from the excellent modern textbooks; this knowledge is too impersonal. The teacher should supply the key to make impersonal knowledge personal, and turn a student into a doctor.

Some may scoff at the idea of a throat and ear surgeon being so ambitious; but all will agree that experience has the advantage of giving what is called Clinical Sense, and there is no reason why we should not attempt to hand it on.

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

W. M. Mollison

Professor Ryle recently wrote of Clinical Sense and suggested that it really was an application of large experience and not a special sense at all.

The application of past experience comes easily to some, others acquire it only with years, and yet others seem never to acquire it, and it is doubtful if the last group can ever be good doctors.

To descend to details of the teaching of ear, nose and throat affections : this is where I feel great diffidence : every teacher evolves his own method, and it is really presumptuous to speak of those points about which all have come to decisions. I ask them to overlook it, and shall aver I am directing my remarks only to those who are the Taught.

While examining the case with his pupils it is no bad thing for the Teacher to think out aloud, as it were, while making up his mind about the local lesion and about the patient : he gleans much too by listening to the patient's story and by questioning him, endeavouring to avoid leading questions. He should question the student or post-graduate though naturally he must think along rather different lines in their respective cases.

Questioning the student will reveal their powers of observation and knowledge.

In establishing principles try and impress the frequency of common conditions and causes ; think of these first and only then pursue the rare ones.

He should then demonstrate the common normal abnormalities in the field of observation ; here are a few obvious examples.

The *Nose*.—No two noses look alike, the presence of deflections of the septum and large turbinals are of no import, as long as the owner has no symptoms.

The nasopharynx is very constant : but the sheath-like swelling on either side of the septum may be a normal abnormality. Failure to realize this has lead to removal of a piece for section and the projected application of Radium by means of a complicated apparatus ; under the mistaken interpretation of the section.

The *Mouth*.—In the mouth the normal bony swelling in the hard palate may be so large as to suggest a pathological condition ; and the papillae on the hard palate may be very prominent, perhaps due to the irritation of a dental plate.

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

This condition has been mistaken for early carcinoma, and removal contemplated.

The open mouth does not necessarily mean mouth breathing, as was pointed out by a dental surgeon and laryngologist.

The *Pharynx*.—Show that examining the patient with the head turned to one side produces a swelling on the posterior wall due to the prevertebral muscles—the swelling or projection can be so large that it has been mistaken for retropharyngeal gland or abscess.

The normal movement of the posterior wall must be shown so that lack of or abnormal movement may be recognized.

The *Tongue*.—The normal circumvallate papillae vary a good deal and when easily seen may be mistaken for an abnormality.

The *Larynx*.—The occasional normal overlapping of the arytenoids and reversed action of the cords must be taught.

Having dealt with the local lesion, we turn to the patient.

Doctors and therefore Teachers are detectives; this no doubt accounts for the fact that many doctors read thrillers, and that many writers of detective stories are doctors, or make doctors their detectives.

Just as there are different types of detectives, so are there types of laryngologists.

The original detective was created by a doctor, Conan Doyle, and was founded on Dr. Bell of Edinburgh; Austin Freeman, a doctor, created Dr. Priestly, who was a consulting physician at University College Hospital, and combined this with being a laboratory worker. Bailey made Mr. Fortune, a doctor, though as far as I can gather, he had ample private means. He appeals to me for the reason that he had a great dislike of anything out of the common, and that dislike is the spirit that makes for research and diagnosis.

Inspector French was on the other hand just a very careful observer.

Perhaps the greatest of all though is Dorothy Sayers' Lord Peter Wimsey, who is a first rate psychologist as well as an astute observer, and we must not forget Agatha Christie's Poirot, the apotheosis of psychologists.

If I had to construct an ear, nose and throat man from detectives I should choose Mr. Fortune, and ask him to confer with Poirot and Lord Peter Wimsey.

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

W. M. Mollison

It is perhaps strange that no one has created a detective from an ear and throat specialist. The late Dan McKenzie should and could have done it.

In this detective frame of mind the Teacher approaches the patient; he listens to his story and notices all he can while he sits before him. The story may be rambling and long, but how often has some remark by the patient, or a relative, put one on the track leading to a diagnosis.

A boy had been under suspicion of some intracranial complication owing to persistent headache during several weeks after an acute otitis media, which had healed; his mother noticed one day that the boy failed to name some common article of food at a meal. The cerebral abscess was opened, and recovery followed.

A man complained of a dry throat, and no cause was found; in the course of conversation he then mentioned he had an enlarged prostate, which had lead to constipation: for this he had been taking "salts" too freely, the dehydration accounted for the dry throat.

The patient's story may too contain the key to the psychological basis of the case: in these days domestic crises may be revealed; on more than one occasion recurrence of attacks of spasmodic rhinorrhœa have coincided with the departure of a cook.

In some cases the story is quite useless, and we all know the patient who produces a paper and proceeds to retail his history for the last forty years.

It was a veterinary surgeon of this type who exasperated his aurist into telling him what an inestimable advantage he had in that his patients could not talk.

The general appearance of the patient—must receive attention. Does he look well, or ill, or exhausted? Is he losing weight? Do his clothes fit as they used? Is there a history of previous illnesses, or previous operations? Are the eyes normal or are there signs of Keratitis? Are the sclerotics unusually blue? Do the pupils react or are there any signs of poor eye movements? Is mystagmus present? Is the head unusually large? are there signs of old or recent facial weakness? This may only show in blinking, one lid being a trifle sluggish. Has he or she, or her parents suffered from migraine? Has she indigestion? Is swallowing normal? Is sleep normal?

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

Teaching

All doctors have a touch of the witch doctor in them. In modern language they are psychologists, and it is the aspect of teaching which is most difficult to pass on to the student, as it is largely the outcome of experience ; but the student may acquire something by noticing the method of the Teacher in handling the patient. We have been told that the student must have courses in normal psychology to add to his curriculum, but there are many who feel that this is a subject which is ever present from the moment he begins the clinical part of his career, and should be absorbed rather than learnt.

In speaking of treatment it would be well to keep in one's mind one of Carrel's sayings : " Disease is a personal event," and try to instil this into the mind of the student : he must try and put himself in the place of the patient and ask himself whether he would undergo the treatment or operation he is advising.

The Taught

Looking back to one's student days one is struck by the changed attitude of to-day's student : forty, or even thirty years ago, no student questioned the statement of his teacher ; the members of one's hospital staff were men on pedestals. When I started work at Guy's, Mr. Howse (Sir Henry Howse, later) was still using the carbolic spray, and I am sure he would have bitterly resented any suggestion that there might be a better method ; even though his junior colleagues had already introduced the aseptic technique. And I shudder to think what would have happened if one had questioned an opinion of my Surgeon, Mr. Jacobson. To-day there is an admirable difference in this attitude ; the teacher is much more approachable and the student is not shy of questioning his statements, and both gain thereby ; though the teacher may find himself embarrassed now and then.

It is well, therefore, that the teacher should not be too dogmatic, though he must be so on occasions to impress a principle and he may be allowed to make statements or a diagnosis to stimulate thought, though he might find it difficult to defend it against well-directed shafts of criticism. This, too, may be compared to the method of the detective who puts forward a theory to himself, or to his Dr. Watson.

The taught must try and keep *clear reasoning* and *observation* which Lord Horder called the twin pillars of medicine,

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press

and be able to criticize in his mind, if not vocally, statements that sound to him astray from essential truth.

Lastly, we must remember Osler's words, " that doctors are fallible, and ever beset with the common and fatal facility of reaching conclusions from superficial observations, and constantly misled by recent experience." These words are dreadfully true and apply I suspect even to laryngologists. Laryngologists are detectives and one knows what scorn one has for the detective who carelessly misinterprets a clue.

Having rashly chosen this subject of Teaching, it was borne in on me that there was really nothing fresh to be said about it, and if there were, as the lawyers say, it had already been said in a better way.

The following quotation from a poem written by the late Dan McKenzie, a most versatile and delightful colleague, seems to be appropriate to the younger generation.

May their youthful ardour last them,
Till all chilling fears are past them,
That no killing frost may blast them
As they rise.

https://doi.org/10.1017/S0022215100005910 Published online by Cambridge University Press