PAPERS AND ORIGINALS

The Medical Professorial Unit*

LESLIE J. WITTS

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One cannot dogmatize about the motives which have led men to become whole-time professors of medicine. A rather high proportion of the first professors had private means or a wealthy wife and enjoyed practising medicine as an avocation rather than as a gainful employment. Some had worked in laboratories in North America or in the armed Forces in the 1914-18 war and had seen the great future which lay ahead for the investigation of patients by laboratory methods. My own decision to become a whole-time professor of medicine was initially inspired by hero worship. I had been ward clerk and house physician in Manchester to Professor G. R. Murray, the discoverer of the thyroid treatment of myxoedema. By this time he had become the conventional professor of medicine, paid only a negligible honorarium for his university duties, who was busily engaged in private practice and had abandoned research. I learned of the newly established clinical professorial units in London and the headship of one of these units seemed to me the ideal position for combining research with the care of patients.

This ambition was submerged for a time when I was appointed assistant physician to Guy's Hospital. Here I soon learned the difficulty of combining successful private practice with research and writing, a lesson that was reinforced by acquaintance with Sir Thomas Lewis and his writings. Some of my small practice had been with patients with leukaemia and it left me with a distaste for taking money from people for whom one could do so little, though Freud tells us this is an unhealthy attitude of mind. I have always been interested in the organization and revision of knowledge, particularly in my own special field of interest, haematology, and working with Sir Arthur Hurst I learned to enjoy teaching by case demonstrations, which cannot be done well without spending time in preparation. I did not think I could be happy if I did not make some contribution to medical knowledge and

thought. To combine all these things with private practice seemed beyond me, so when the choice was offered, I became a professor, much to the surprise, indeed consternation, of relatives, friends, and colleagues, who were disturbed that I should turn aside from the heights of consultant practice.

I fell between the first and second generations of whole-time clinical professors. My creed was that of Francis P. Wood (1966): "I tried to make a place where the finest, most intelligent young gentlemen would want to come to work and stay Anything which contributes to this purpose is good; anything which interferes with it is bad; and anything which does not affect it is unimportant." I think the first business of a university department is to produce people, in contrast to a research institute which produces results. After me came the second generation of whole-time professors, clinical scientists for whom research was the breath of life, men like McCance, McMichael, and Pickering. The achievements of their generation have been great. Indeed, they seem to me to have pushed the frontiers of knowledge so far that their successors in this field are in danger of losing touch with clinical medicine.

Medical Professorial Unit and the Patient

The medical professorial units can be judged by the standards of their care of patients, teaching, and research. The argument that the whole-time clinician cannot be as competent as his consultant colleague who earns his living by the practice of his art has subsided. Indeed, a growing number of clinicians feel that they cannot attain the highest level of proficiency unless they *do* work whole time. Few would deny that many of the advances in the practical relief of disease over the last 50 years have originated in or been developed by the clinical professorial units. The danger that the physician may neglect the whole man in his concern with some special aspect of disease is omnipresent and is not confined to the clinical scientist. The whole-time worker is probably more likely to be tempted into unethical experimentation in his desire to acquire new knowledge but the safeguards against this have been progressively strengthened.

Like the teaching hospitals in general, the clinical professorial units are often accused of neglecting the social and psychological effects of disease. There are no foes so difficult

*Shortened version of the Harveian Oration given to the Royal College of Physicians of London on 18 October 1971.

to combat as ignorance and prejudice, but like the walls of Jericho they are likely to fall if one blows one's trumpet loud enough, and so I hope I shall be forgiven if I blow mine. A medical social worker and later a psychiatrist were attached to the Nuffield Department of Medicine in Oxford soon after the end of the second world war, taking an active part in teaching as well as in treatment. We started a weekly medical audit or soviet at which, as part of the review of the week's work, attention was drawn to patients likely to have social problems. A series of papers with titles such as a social study of hospital treatment, length of stay in hospital, the use of almoner's records for research, and social service for a medical ward, attests our interest in this field.† A special invitation was always extended to the family doctor to attend a case demonstration at which a patient of his was shown, so that the doctor could describe the home background and make any comments or criticisms.

I was greatly interested at that period in Freud's work, but my teaching was more influenced by Halliday's (1949) *Psychosocial Medicine*. Years later a number of my former students have told me how grateful they were for having had their attention first drawn to the psychological factors in medical complaints in the Nuffield Department of Medicine. Unfortunately, important as are psychological considerations in the care of patients and the teaching of students, the psychosomatic hypothesis has proved singularly unfruitful in inspiring effective research on the large number of functional and organic diseases so often attributed, in part or wholly, to psychological causes.

Research

The men who were appointed heads of the new clinical professorial units were faced with four sets of duties—care of patients, teaching, clinical research, and administration. In such a situation research is in danger of going to the wall, as Dragsted (1962) showed in his amusing essay, "Who Killed Cock Robin?" Inability to find time for personal research has been the most frequent complaint from the university clinical professors. Clinical scientists like Sir Thomas Lewis (1933) and Sir Herbert Parsons thought that the position was an impossible one and that the clinical professorial units should have been exclusively devoted to research. For their first 20 years the units were sharply criticized on the grounds of the weakness of their research. The criticism was premature, as shown by the review of the contribution of clinical academic departments to the advancement of medicine by K. W. Donald (1971) in his Barnes lecture. In spite of all the difficulties, the level of research in the clinical professorial departments has been high, whether it is judged by volume, by quality, or by academic honours received.

Much of the early criticism was captious and unfair. When I came to Oxford in 1938 the term "clinical professorial unit" was anathema and therefore we were given charge of "university departments." Lord Nuffield was thought to have been misguided in having given his great benefaction for clinical rather than preclinical research. We were criticized for not engaging in experimental work in the laboratory; now the pendulum has swung in the opposite direction. The clinical professorial units are criticized for being more interested in research than in their other duties. Their research, too, is criticized as being academic, and remote from the patient and his needs.

I cannot rebut the charge of irrelevance entirely, indeed, I have often made it myself. Nevertheless, the medical units have led the way in the study of the whole man and the population group. One of the researches which was not only

excellent in itself but had far-reaching effects over the years that followed was the study by Professor L. S. P. Davidson and his colleagues (1935) of the prevalence of anaemia in Aberdeen. The medical units have also played their part in the therapeutic trials which have become a major part of clinical medicine in the last 40 years. They have been uniquely placed for following up their patients, and the follow-up studies carried out by my colleague Dr. S. C. Truelove and his associates in our department in Oxford set new standards in this field. I brought together ideas on the value of the study of patients in groups in a book which I edited on *Medical Surveys and Clinical Trials* (Witts, 1964). This was followed by Acheson's (1967, 1968) outstanding work on the Oxford Record Linkage Study, which introduces the concept of the supervision of the patient from the cradle to the grave and which has had such wide repercussions.

Increase in Size of Medical Professorial Units

The staff of the original medical professorial units usually consisted of a professor, a senior assistant or assistant director, and two junior assistants, in addition to the resident staff provided by the hospital. This structure did not have a strong enough centre, and one of the troubles of the original units was a rapid turnover of staff. A minimum effective unit needs a professor, at least two senior assistants, and a non-medical graduate with security of tenure, in addition to two or three junior assistants who will maintain the infusion of new blood and provide the next cohort of trained workers. Including the professor, this means six or seven people. There will also be a number of attached workers on research grants of one kind or another, many of them working for a higher degree.

When the first medical units were introduced the laboratory services in the teaching hospitals were often meagre and the medical units undertook much of the routine laboratory investigation of their patients and often those of their colleagues, particularly in diseases, such as diabetes, in which long-term laboratory control is essential. Research in internal medicine outside the medical units at this time was almost entirely clinical, though the electrocardiograph and the x-ray screen were already foreshadowing the changes that were about to come. The voluntary hospitals, including the teaching hospitals, were profoundly changed by the Emergency Medical Service, which was established during the 1939-45 war. In particular, the bacteriological and pathological services were much improved. These changes might have been expected to diminish the scope and influence of the medical units but they were counterbalanced by the scientific revolution in medicine. This led not only to enlargement of the medical units but to the growth of clinical research alongside and outside the units.

To get evidence of the growth in size of the medical units I obtained figures from 32 professors of medicine in the U.K. at the beginning of this year. The average medical professorial unit today might be presumed to consist of eight people paid by the university and a similar number of attached workers, but like many averages this does not mean a great deal. The scatter of the figures was wide and the most important finding in the survey was the difficulty in defining the medical professorial unit.

Professors differ in their propensity to build empires but this is not the chief reason for the wide variations in numbers. Universities vary in the extent to which lecturers, readers, and additional professors in medical subjects are classified as members of the medical professorial unit or of the department of medicine. Many departments of medicine are in a flux as second departments of medicine are formed to cope with increased numbers of students or special units are budded off from the primary medical professorial unit. In London the medical professorial units have usually retained

† See Brown and Carling (1945), Gardner and Witts (1946), Beck (1947), and Beck, Gardner, and Witts (1947).

their clear-cut, separate identity, but outside London the line between the medical unit and the rest of the department of medicine has become increasingly blurred. There has been a great increase in lecturers and tutors in medicine paid from university funds. In addition, a number of the junior consultants hold so-called A+B appointments in which they are paid partly by the N.H.S. and partly by the university so that they can spend some sessions in research. These men are functionally indistinguishable from members of the medical unit paid by the university, for the latter are expected to take their full share of the clinical work of the hospital.

WHOLE-TIME WORK

Consultants may be appointed to do whole-time work in general medicine or in services such as cardiology, neurology, and haematology, paid by the N.H.S. and with the university title of lecturer, reader, or professor. This is a common practice in Scotland. In England and Wales there is an increasing tendency for consultants in the teaching hospitals to opt out of private practice and become whole-time physicians in order that they may have more time for teaching and research. This often happens with men specializing in subjects such as cardiology, diabetes, and neurology. They have their own assistants and are likely to become professors *ad hominem*.

Many professors of medicine regard it as part of the duty of the medical professorial unit to act as a nursery in which new developments and innovations may be brought to fruition. In one of the London hospitals, for example, academic appointments in psychiatry, rheumatology, clinical haematology, human metabolism, and nuclear medicine all originated in the medical unit and the holders later moved into the department of medicine; haemodialysis and renal transplantation remain within the medical unit. In other medical professorial units similar subgroups have been formed but have remained within the medical unit, though the leader of the group may have the title of professor or reader. Frequently, innovatory groups originate outside the medical professorial unit and are not formally connected with it. Groups may have cross-linkages with other departments such as pathology, genetics, or community medicine. Finally, there are M.R.C. Groups, composed of people who are members of the medical unit or the department of medicine, and M.R.C. Units, which are independent but often have some sort of fealty or allegiance to the professor of medicine.

From data derived from a number of sources I calculate that there are now more than 1,000 whole-time clinical teachers and research workers in divisions of medicine alone in our hospitals in the U.K. Exponential growth must inevitably flatten out and become logistic, and it seems probable that in medicine we are approaching the state which de Solla Price (1963) calls "stable saturation." Whereas professors of my generation have been involved in a period of exponential growth, our successors will have the task of re-modelling a relatively stable population, something like the conversion of chrysalis to imago.

The Goodenough Concept

The Goodenough Committee recommended that the professor of medicine should be the academic head of the division of medicine,[‡] though the consultant physicians (the N.H.S. staff as we should now say) "would retain unfettered responsibility for the care and treatment of their patients." We can think of the professor of medicine as being at the centre of four concentric circles. I use the present tense though to some extent I am speaking of the past. Within the innermost

circle—the medical professorial unit—he is in complete charge of clinical and academic work, the organization of research, and the appointment of junior staff. In the second circle—the department of medicine—he is responsible for the organization of teaching and the allocation of university research funds, though his responsibility is usually shared. In the third circle—the outer sphere of the division of medicine proper, which includes autonomous departments such as geriatrics, neurology, paediatrics, and psychiatry—the gravitational force of the professor of medicine is much feebler and he is often little more than an advocate for the various special medical departments in university committees. The fourth and outermost circle, still relatively unexplored, comprises community medicine, relations with the district hospitals, and so on.

Rather like the poor cat in the adage, professors of medicine have vacillated between the desire to be in complete and unmistakable control of the division of medicine, or at any rate the department of medicine which is contained within the two inner circles, and the desire to withdraw into their own unit and concentrate on research. Distraction between these two roles can indeed be regarded as the occupational disease of professors of medicine.

For reasons of history and administration, chest diseases, communicable diseases, geriatrics, neurology, paediatrics, physical medicine, and psychiatry have come to be separated from internal medicine. Some of them commonly have separate buildings, and I have put them in the third circle of my cosmos. More difficulty arises in fixing the boundary between the two inner circles, the professorial unit and the department of medicine in the sense of internal medicine. Some of the original university clinical professors and Sir Thomas Lewis were like Alice Meynell's shepherdess "who is so circumspect and right; she has her soul to keep," and they jealously guarded the boundaries of their units. Some educationalists still feel that it would be wise to concentrate the university effort within the clinical professorial units. However, the trend is all in the other direction, with the university increasingly permeating the department of medicine and the boundary between the two inner circles becoming blurred.

SPECIALTIES WITHIN INTERNAL MEDICINE

In addition to the specialties which I have put in my third circle, the Joint Committee on Higher Medical Training now recognizes cardiology, clinical endocrinology, clinical haematology, clinical pharmacology, gastroenterology, nephrology, and rheumatology as specialties within internal medicine, the second circle of the model. Experience, particularly in the U.S.A., has shown that there are great disadvantages for the care of patients, teaching, and research in an ever-growing number of specialized units. Workers in these new specialties should remain under the banner of internal medicine and should be capable of practising, teaching, and examining in general medicine. There are sound reasons for drawing chest diseases, dermatology, venereology, and neurology back under the same banner, a banner which will have the university in its quarterings.

There is a good case for putting specialties which demand autonomy into separate departments in the hospital centre or in district hospitals. Their work can then be organized in terms of systems and located in departments in which physicians, surgeons, radiologists, and others work alongside one another. This has already been done in some instances in gastroenterology, cardiology, and neurology and neurosurgery. I shall discuss the abstract idea of a teaching hospital later but most medical educationalists believe that organization in systems is not suitable for a teaching hospital; it is the difference between a technological institute and a university. High technology, whether in research or practice, can likewise be semidetached from the teaching hospital proper.

[‡]It is unfortunate that we use the word "divisions" where the Americans say "department" and vice versa.

An example of a research institute which is independent but remains within the curtilage of the teaching hospital is the Walter and Eliza Hall Institute at the Royal Melbourne Hospital, which Burnet and his colleagues have made world-famous. Contact with the teaching hospital can be maintained by participation in teaching exercises such as the clinico-pathological conference, and by the attachment of students in their elective period. By some such surgery the division of medicine could be cut down to a more manageable size.

University and Hospital

It is time to look again at the conclusions of the Royal Commission which recommended the formation of clinical professorial units in London in 1913 and the Goodenough Committee in 1944. The Royal Commission said that the standards of the teachers in the clinical subjects ought not to be different from those of university professors in other subjects and this would be best ensured by the foundation of clinical professorial units. The Goodenough Committee concluded that "the whole-time professors in clinical subjects should be the academic heads of their departments, with a measure of control over the planning of the teaching work of their non-professorial colleagues," and the University Grants Committee subsequently channelled research funds through the academic heads of departments. In the 1920s, when the medical units started, the times were ideal for the reformation of clinical teaching and research, and in the 1940s, when the great expansion of the medical units took place, divisions of medicine were still small and objections to unified control were based on individualistic and not technical considerations.

The scene now is very different. The teaching hospitals are in the forefront of the technological revolution. Costly apparatus of great complexity is used in almost every field of diagnosis and treatment. Records of patients, laboratory investigations, treatment of emergencies, the prescription of drugs, all are being automated and computerized wherever possible. Much of the research has moved away from the whole patient to the heart-lung preparation or the organelles and molecules of the cells. It is a strange world in which to teach undergraduates clinical medicine. The spiral of time has brought us back to the same problem as faced the Royal Commission 60 years ago but at a different level. Then it was the problem of introducing university ideals and methods into hospitals which were still in the pre-industrial stage of development. Today it is the problem of maintaining these same ideals and methods after a technological revolution in the teaching hospitals.

I shall not try now to define these ideals and methods in detail. It should be enough to say that a medical school should be different from a technical institute and that a university education in medicine must be imbued with the idea that man is the measure of all things. The tradition of the doctor as a scholar and a humanist should be maintained. If we take into account the losses by emigration and marriage, at least a half of our graduates in medicine who subsequently engage in professional work in this country will practise as family doctors or hospital consultants. Others will have an important part to play in directing medical policy and research and in public affairs. These are the tasks for which a university education should fit medical graduates.

Future of Teaching Hospitals and Medical Units

The future role, if any, of the university professor of medicine and the clinical professorial unit is intimately bound up with the purpose and organization of the teaching hospitals. McKeown (1965) complained that the teaching hospitals have carried over from the voluntary hospitals the tradition of lack

of interest in psychiatry, geriatrics, and chronic sickness, though these are the largest and most unsatisfactory areas of medical practice today. His solution was a "balanced teaching hospital" which accepted responsibility for the population of a defined area and at the same time admitted a proportion of selected patients from a much larger population. An experimental medical school of this kind would be of great interest but it is perhaps unreal to expect the existing teaching hospitals to be converted on these lines. Others have suggested that medical students should be taught in the district hospitals as these are less specialized than the teaching hospitals. There is indeed, a great deal to be said for an arrangement such as that planned at the University of Southampton, whereby the medical student will spend his final year working with responsibility for patients in a district hospital, but it would be difficult to go farther than this. One of the greatest weaknesses of British medicine has been the divorce of the London hospitals from the university, and this is a historical accident which few educationalists would like to see repeated.

At the opposite pole we have the view that the primary task of a teaching hospital is to be a centre of biomedical research (Wyngaarden, 1971). Related to this is the idea that the concept of a professor of medicine, pure and simple, is no longer viable on account of the high degree of specialization in medical practice and research. A spokesman for this view is Peart (1970), who wrote of "the death of the professor of medicine." He implied that the head of the medical unit will become a professor of investigative medicine, as advocated by Sir Thomas Lewis, and the division of medicine will become a consortium of professors of medical specialties, directors of departments and research groups, consultants, and others, from whom a rotating chairman will be chosen. There would probably be a clinical sciences building with a standing committee for the allocation of accommodation and funds for research.

I am quite sure that general medicine in the teaching hospital cannot be dismissed in this cavalier fashion or handed over to visiting family physicians. Nor do I believe that medicine in the old sense of internal medicine has become a mere rump. I prefer the simile of the banyan tree whose branches root themselves like new trees over a large area where numerous individuals can live in amity together. And whether one thinks in terms of a main trunk or a stem cell or a germinal layer, I believe that we shall continue to need a capital territory of unspecialized general medicine. The medical professorial units have shown their ability to act as foci of growth which have given rise to successive new developments in medicine, and there is no reason to believe that the need for this will diminish in the future.

What is important in the teaching hospitals is to render unto Caesar, in the shape of the N.H.S., what is Caesar's, and to God, in the shape of the university, what is God's. From the point of view of the university, the primary purpose of the teaching hospital is the education of undergraduate and postgraduate students of medicine. However desirable it may be to streamline committee work, it would be unwise to allow the university departments to be merged in a hospital organization that is concerned primarily with the care of patients. I do not think a university department of medicine can survive if it is no more than a random collection of virtuosi. Someone has to stand in the middle to maintain the connexions between the basic sciences and clinical practice, to interpret one clinical group to another, and to encourage innovation and promote change. This is the operational role of the professor of medicine and to carry it out successfully he needs a flexible medical professorial unit behind him.

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Prognostic Implications of Electroencephalographic Findings of Hypsarrhythmia in First Year of Life

ETTA FRIEDMAN, G. PAMPIGLIONE

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Summary

One hundred and five children who had shown the electroencephalographic (E.E.G.) features of hypsarrhythmia in the first year of life (1956-62) were assessed in 1969 in respect of death and mental development. Irrespective of the presenting symptomatology, and to some extent irrespective of therapy, mortality in the group was of the order of one in four (mostly before the age of 3 years) and the incidence of mental subnormality in the survivors was 77%. Only 18 children attained fairly normal standards of mental development and could attend ordinary schools. It seems that whatever the clinical picture at the time, the presence of hypsarrhythmia in the E.E.G. of an infant is a physical sign of grave prognostic implications.

Introduction

In clinical practice electroencephalography (E.E.G.) provides information on some aspects of cerebral function in the course of an illness. Most E.E.G. features, like other physical signs in medicine, can be interpreted only in the context of the patient's clinical picture at the time. Some E.E.G. findings, however, as with certain other laboratory investigations, may carry a special diagnostic or prognostic significance whatever the initial clinical circumstances, being found only in particular pathological conditions. Such E.E.G. findings include, for example, the periodic complexes in subacute sclerosing panencephalitis, the repetitive discharges of Jacob-Creutzfeldt disease, or some of the patterns in barbiturate poisoning.

Hypsarrhythmia is the name given by Gibbs and Gibbs (1952) to a gross E.E.G. abnormality never reported in any series of normal control children. Children with hypsarrhythmic E.E.G.s are usually below the age of 2 years, often under 12 months, and may be suffering from poorly understood disorders affecting the brain. Clinically, they present with a variety of symptoms, often, but not invariably, including seizures of some kind. While the syndrome of infantile spasms is known to be commonly accompanied by the E.E.G. findings of hypsarrhythmia, it is not often appreciated that hypsarrhythmia

may be found in children without this syndrome, and even in the absence of seizures of any kind (Hess and Neuhaus, 1952). In the original work of Gibbs and Gibbs (1952) it was suggested that hypsarrhythmia—that is, a term describing only the E.E.G. features—was often associated with mental retardation. This view was also supported by the work of Samson-Dollfus (1959) on 15 children with hypsarrhythmic E.E.G.s and various clinical features.

The present survey was planned to assess the prognostic implications of the finding of hypsarrhythmia in the E.E.G.s of infants, irrespective of the presenting symptomatology. The outcome after several years was assessed in relation to survival and general intelligence.

Subjects and Methods

During the six years from December 1956 to December 1962, 894 children in their first year of life had E.E.G.s taken at the Hospital for Sick Children. The E.E.G.s of these infants were reviewed, and the features of hypsarrhythmia were found in 143 cases. The presenting clinical symptomatology and history showed a great deal of individual variation, though most of the babies had been referred for E.E.G. studies because of seizures of one or other kind. In a few children, however, no seizures had been reported by the time hypsarrhythmia had appeared.

The only two criteria for inclusion in the study were the age of the child (up to 1 year) at the time of the relevant E.E.G. and the features of hypsarrhythmia (see Fig.), defined as

E.E.G. of child aged 10 months. Drugs had not been given. Calibration 100 microvolts. Time marker 1 second.

Department of Neurophysiology, The Hospital for Sick Children, Great Ormond Street, London W.C.1

ETTA FRIEDMAN, M.B., CH.B., Senior Registrar
 G. PAMPIGLIONE, M.D., F.R.C.P., Physician in Charge