JUNE, 1964

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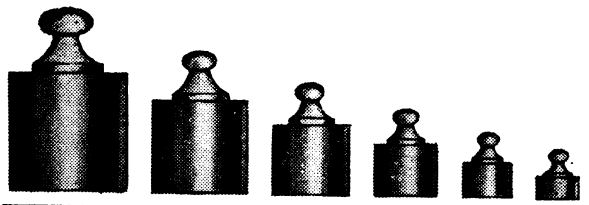

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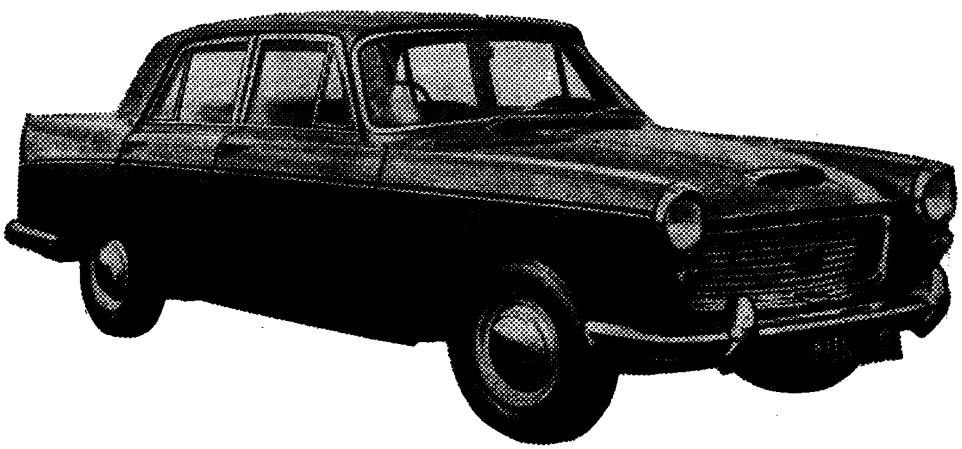

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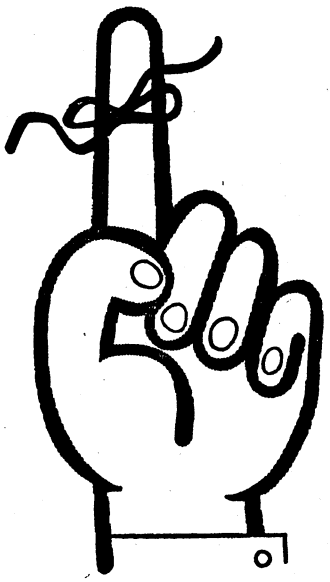

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ULSTER MEDICAL JOURNAL

PUBLISHED ON BEHALF OF THE ULSTER MEDICAL SOCIETY

Vol. XXXIII JUNE, 1964 No. 1

THE TWO CULTURES

By C. H. G. MACAFEE,
C.B.E., D.Sc.(Hon.), M.B., F.R.C.S., F.R.C.S.I., F.R.C.O.G.,
Emeritus Professor of Midwifery and Gynæcology, The Queen's University, Belfast

THE CAMPBELL ORATION
to the Ulster Medical Society on 5th December, 1963

MR. PRESIDENT, MR. CAMPBELL, LADIES, AND GENTLEMEN:

My colleagues could have conferred no greater honour on me than to ask me to deliver this year's Campbell Memorial Oration. Little did I think when, as a first-year hospital student, I was allocated to Robert Campbell as surgical dresser, that I should be standing here tonight as Campbell orator. My only wish is that I could have been more worthy to follow in the footsteps of those distinguished orators who have preceded me.

I must be one of the few left in the school who have had the privilege of being taught by Robert Campbell. He was an extraordinary man. As a clinician he was an outstanding teacher. He would maintain long-continued silences (I have known him do a complete round of fifty-two beds without uttering a word), then, at all-too-infrequent intervals, he would discourse eloquently and, with characteristic pawky humour, leave the class with a clinical picture never to be forgotten.

I recall the obituary notice of a Queen's graduate in which the following sentence appeared: "An explosion . . . caused him serious injury and only the fortuitous presence of a skilled surgeon in the vicinity saved his hands and prevented a premature end to his career." The skilled surgeon referred to was Robert Campbell and the patient was the late Professor A. K. Macbeth, my brother-in-law.

I shall always treasure this medal because of its association with one of my

early teachers and because it has been awarded to me by the Fellows and Members of the Ulster Medical Society.

It was Sir Charles Snow(1) who first raised the idea of cultural apartheid—two separate groups with their backs turned on each other in mutual incomprehension. It has been my privilege to practise medicine during one of the most creative periods in medical history, but a period in the latter half of which there has been an unfortunate amount of cultural apartheid in the profession of medicine. Tonight I would like to discuss three aspects of this cultural apartheid.

Whole-time *v.* Part-time Officers.

In the past quarter of a century the Science of Medicine has tended to become dominant while the practice of the Art—which is still so important in medicine—has tended to decline. The whole-time professorial unit which has developed with the scientific age is often regarded by part-time colleagues as a unit which adopts the scientific to the almost complete exclusion of the humanitarian method. If we look at the relationship between members of a whole-time professorial unit and their part-time colleagues can we say it is ideal? Who is to blame? They are both to blame. In a recent publication the following quotation referred to the qualifications the writer considered necessary for the head of an obstetric and gynæcological teaching unit:—

> "If we are to encourage the better student . . . we must light the flame of enthusiasm early in his career and keep it burning high with stimulating teaching and the challenge of research. This, together with a stronger emphasis on well-supervised more extensive clinical experience, will produce the type of specialist necessary for the future understanding of our specialty. Such teaching must be introduced by one who has the attributes of a stimulating teacher; who has had a liberal clinical experience where compassion, humility, and human understanding have been flavoured with the anguish of disaster, the elation of success, the competence of experience, and the sincere thirst for research; and who has the interest of the student at heart."
>
> (Hughes: *Obstet. Gynec.*, May, 1963, p. 639)(2).

This was written in 1963, but sounds like an emotional outburst not uncommon about 1763. It describes the training of a student which would be almost impossible to arrange with the present curriculum, and a man or woman, as head of the department, whom it would be difficult or impossible to find today.

Some of the qualities described above can be attained only by a man who, before becoming head of a department, has had extensive experience as a part-time consultant. As a result of this he has probably not had the time, training or opportunity to engage in what would be regarded today as real scientific research.

If this paragon of virtue with "the attributes of a stimulating teacher" and "a liberal clinical experience" can be tempted to leave his part-time activities and become the head of a whole-time unit, why is he regarded with such suspicion by the very group he has just left? This, perhaps, arises from the fact that he

becomes the head of a department who has people working with and for him, and therefore arouses the natural antipathy which surrounds anyone who is a "head." If, in addition, his department is working as it should, he will be producing original work which should bring credit to his school and hospital, and this, in its turn, may arouse a certain amount of jealousy.

I believe that there should be closer association between university departments and part-time consultants, that a certain number of part-time consultants should take an active part in the work of the Department, both in teaching and research. This would entail a considerable amount of "after hours" work for the part-time worker as it does for the whole-time professor or departmental lecturer.

I believe that this closer association would lead to mutual understanding and respect. The part-time consultant feels that the whole-time professor has a certain amount of protection from the outside world and can pursue his interests undisturbed by the competition of private consultant practice. The whole-time professor, and all the members of his team, feel that they are badly treated by the Inland Revenue as compared with their part-time colleagues, and that they cannot afford to educate their children as well as can their opposite numbers.

Both these beliefs are real and probably true, but when one views the changing social world in which we live is it not possible that the differences described are not as important as we think?

The conscientious whole-time professor and the members of his staff work very hard—I really believe harder than they are given credit for—but I do not believe that many of them would change places with their part-time colleagues; in fact, quite a number of part-time colleagues seem to be anxious to become whole-time officers.

While we have been raised from witchcraft by the efforts of our colleagues in the basic sciences, and our objectives must be to produce students who recognise the importance of scientific research, I deplore the increasing disposition to consider clinical competence and clinical research as inferior to scientific research. To secure both approaches in an obstetric and gynæcological department may mean two men at the head with entirely different training and interests.

I think Queen's has been particularly fortunate in the appointment of my successor, Professor Pinkerton, a man who has had an extensive clinical experience and, like myself, received his early training from my predecessor, with on top of this a scientific training which I am sure will enhance the reputation of the Department and Medical School.

Undoubtedly science and technology are on trial, and in some way science must be made aware of its human origin and the human being to whom it is applied. The emotional approach is not a helpful one, and there is already too much opinion and too little understanding of the problem.

Medicine, no matter how much it develops along scientific lines, must always be an "applied science," and one differing from all the rest in that the application is to man himself. Its application must be made in such a way that it will produce the maximum of relief to the sick man, and this calls for certain qualities in the

practising doctor which differ from those required in the practice of any other applied science. Herein lies the Art of medicine.

A few weeks ago I listened to a distinguished scientist, a Fellow of the Royal Society, Sir Charles Harington(3), reading the Nuffield Lecture in the Royal Society of Medicine. His lecture was entitled "The Debt Science owes to Medicine," and in this outstanding lecture, among many other notable statements, he made two remarks which I would like to repeat. First, "The scientific problem has been set by observations made in the practice of the art," and secondly, "The complete doctor must be something more than a scientist."

I would not wish my audience to think that I do not appreciate the deep debt that we obstetricians owe to the scientific approach to oliguria and anuria following accidental hæmorrhage, to mention but one advance. There are many women alive, well and happy, today who would be dead were it not for the work of Professor Bull and his co-workers.

Scientists prefer to deal with things they can measure and weigh and express in quantitative terms, like the electrolyte balance, but in medicine, no matter how scientifically one reviews the patient, there are certain features like fear and pain which are real but difficult to assess and record in discrete units.

The motto on the Campbell medal is: "Where there is love of humanity there is love of the art." If I might now add one from a paper by Dr. Girdwood(4):

"When humanity is lost medicine is not a noble career"
(*Brit. med. J.*, March 9, 1963; p. 631)

While medicine is undoubtedly a science it is a science in which the scientist is dealing with people and not things.

When I was in Malaya and Singapore earlier this year I acted as extern examiner. As the patients arrived for the clinical examination I noticed that each of them had a piece of tape, on which there was a number, sewn round her wrist. I asked the nurse what this meant and her reply was, "We do not remember the name, we remember the number." While this attitude may be justified in Singapore, where there are so many people of the same name, we must never let this occur in British medicine.

There is undoubtedly a tendency in some whole-time departments to forget the patient and the patients' relatives in a way that is impossible in part-time practice. While the profit motive may make men greedy, its absence may make men lazy, and lazy not only from the viewpoint of work but in being careless about their relationships with patients and their relatives. A part-time consultant who appeared at a consultation carelessly or untidily dressed, or who would not be bothered to discuss matters with the patient or the relatives, would soon find that he was infrequently required. Sometimes one finds that departmental heads can be careless about things that are not scientifically important.

In addition, as I have already mentioned, some people feel that the whole-time professorial unit has an entirely scientific outlook. Leslie Williams(5), in his Simpson Memorial Lecture, hit out at the professorial unit in the following way:

> "You may find that the student from a certain teaching hospital might have difficulty in recognising normal from abnormal uterine contractions in an obstetric case unless he has a pantechnicon full of seven channel toko dyanometers. Those of another unit may be great experts in diagnosing hydatidiform mole by ultrasonic echo, while yet knowing little about humdrum things. And exactly the same thing applies to a surgical unit. Thus it may be that a student from a certain hospital will have an extensive knowledge of how to replace three inches of diseased aorta by the appropriate length of a better tubing material . . . (but) his knowledge of minor surgery is rudimentary."

He did not criticise the physicians, but I might point out that it would appear that the modern student is not taught in medical wards to take a pulse, or to recognise the significance of alterations in its rate or volume, or the significance of a moist tongue.

I take exception to Williams' criticisms of a modern method of diagnosing hydatidiform mole as this has been a real advance and a valuable contribution from a whole-time professorial unit.

Medicine has become so complex and scientific that it is impossible for any one man to cover the whole field, but I would endorse the aphorism of A. C. Barnes (Baltimore): "Specialization is the privilege of concentrating on one area rather than permission to forget all other areas." Without our colleagues in other specialties life would become quite unbearable. We can learn from them only if we are in close contact with them either in societies such as this, or at hospital meetings. As I have said, in many university towns there is rivalry between university departments and part-time colleagues, but let this be friendly rivalry, not mutually destructive warfare.

The Family Doctor and the Consultant.

Earlier this year, in a newspaper, there was a small note headed "Dead End," referring to the National Health Service. It read as follows:

> "In no profession is the gulf between the specialist and the rank and file wider than in medicine. The harassed parson may at least indulge in daydreams of gaiters, or even write a treatise on the First Council of Nicæa, but once a man has become a G.P. he renounces all hope of Harley Street and no longer has time to do useful and intellectually stimulating research on the side."

Is this true? Renunciation of Harley Street may be no hardship, but many family doctors have done "useful and intellectually stimulating research," and we have several examples of this in our own midst.

Why is there a gulf between the family doctor and consultant? For somebody in my generation this is hard to understand even today. As a junior consultant I was dependent for my bread and butter, and very much later the cake, on the goodwill of the family doctor. I would not like you to think that this was cupboard love, because it was not. Many of these family doctors were so much

older, so much more experienced than I was, and usually so honest in their criticism, that I was taught a great deal by most of them, and as a result I had a great respect for many of them.

Today the junior consultant is paid a salary which makes the profit motive unnecessary, and to a certain degree has helped to destroy some of the former relationship that existed between the two groups. I have been told that patients may even be seen today without the family doctor being present, the consultant having been given the address of the patient. There can be no excuse for this practice, for the family doctor is in possession of information regarding the patient and the patient's background which the consultant cannot obtain during his short contact with the patient. When I was a very junior consultant I remember well a country family doctor, whom I had never met before, sending me a patient who required a hysterectomy. He came to the operation and assisted. At the end of the operation he turned to me and said: "Had you done a subtotal hysterectomy I should never have employed you again." His reason for this attitude was that he had seen three cancers of cervical stumps following subtotal hysterectomy in his own practice. This is an example of two things—first, how the family doctor can protect his patient, and secondly, how he can take part in the training of the junior consultant. Today I am afraid the family doctor does not often see his patients operated on, and of course in hospital neither patient nor doctor has any guarantee as to who performs the operation.

The family doctor is still the greatest standby of the individual patient, even when that patient happens to be a doctor himself (and I can speak from personal experience) and he should still be the guide, philosopher, and friend of the household. I believe that it is only by restoring the relationship between family doctor and consultant that the profession can be reunited. That many realise this can be seen in Dr. Annis Gillie's report(6) and in the attempts to incorporate the family doctor in schemes whereby they help to train medical students in general practice and obstetrics.

For a number of years there were family doctors associated with my department and these men performed a most useful service and a service that the students fully appreciated. Some time ago one of my students who had completed his two months' residence went to another hospital to gain extra experience in domiciliary midwifery. He wrote to me stating that he felt that he had learnt more from the few cases he had done with one of the three family doctors associated with my department than he had on the district of a very large teaching hospital.

More recently, Professor Pemberton has inaugurated a scheme in which forty family doctors have signified their willingness to co-operate. In this scheme the student is given the opportunity of residing with or attending at the practice of a family doctor for a period of one or two weeks depending on whether he is resident or non-resident. A suggested curriculum has been produced for the guidance of the family doctor, and while this is important I believe that some things not mentioned in the curriculum, like the relationship of patient and doctor,

how to deal with patients and their relatives, etc., are also essential and will be taught unconsciously by the good doctor.

Last July, at the meeting of the British Medical Association, Sir George Pickering's Presidential Address was entitled "Manners Makyth Man," and I believe that this period of association with the family doctor and his wife is an occasion for the exhibition of good manners, and if these are not evident the doctor's wife will have an opportunity of taking part in the training of the future doctor. On quite a few occasions doctors' wives have complained to me about the manners (or absence of manners) of their husband's locum. When they have reached the stage of being a locum without having acquired some manners it is too late, but at the student stage the young men and women are still at a receptive mood, especially perhaps to hints from the doctor's wife.

In this way the student gets an insight into the pleasures and difficulties of general practice at an early stage and when he becomes a resident doctor in hospital can appreciate the position of the family doctor. This is very necessary, because there is a type of young hospital officer who, when speaking to a family doctor on the telephone, is inclined to regard that doctor not as a colleague, but as an inferior being who is trying to double-cross him about getting patients admitted to hospital. I have to admit that I have had the experience of being very rudely treated by the colleague on the other end of the telephone, so that sometimes the junior house officer is not to blame.

The Civil Servant and the Doctor.

> "Medical science is a way of looking at man's behaviour in the mass; art is a way of coping with a complex human situation confronting the individual." (Gilchrist(7): *Lancet*, July 6, 1963, p. 1).

The relationship of the civil service and civil servants to the doctor is very much the same as medical science to the art, for the civil servant must look at "man's behaviour in the mass."

I have had the privilege of being a member of the Hospitals Authority for six years, and I can assure you that to be head of a department and a member of the Authority at the same time guarantees you a double dose of suspicion.

At the beginning may I say that I have acquired a profound respect for the Chairman, Mr. McKinney, the Vice-Chairman, Mrs. Mackie, and many of the executive officers of the Authority for their unselfish service to the medical profession and the Northern Ireland community. I believe that this service could be greatly improved were it not for the parochialism of the lay community and the individualism of many members of the medical profession.

Can the civil service reunite the profession? I believe that much could be done if we could see each other's point of view. In his Rede Lecture on the Two Cultures and the Scientific Revolution(1), Sir Charles Snow has a sentence: "There seems then to be no place where the cultures meet." We, the medical profession (both consultants and family doctors), and the civil servant are most fortunate

in that there is one place where, figuratively speaking, we must meet—the patient's bedside.

At the present time we have too many hospitals in Northern Ireland: in other words, too many isolated units, with the result that we cannot get together in larger groups, something which is essential if we are to unite for the benefit of the patient. In my opinion, and I believe in the opinion of many, the ideal set-up would be about 6-8 general hospitals providing nearly every type of medical service, including general practitioner units.

The general practitioner units for obstetrics, as exemplified by Malone Place, have, I think, been most successful and will continue to be so, provided that the relationship between the practitioner and the consultants is good. All concerned must recognise that it is not possible, nor is it safe for the patient, to run a general practitioner unit without consultant cover. This undoubtedly means extra work for the consultants concerned, and the question of remuneration may have to be considered for both consultant obstetrician and consultant anæsthetist as these units increase in number. I think that these general practitioner units should be extended to medicine in association with the general hospital. In this way one would have not only general practitioners who are interested in midwifery, but many others who do not wish to do midwifery, in close contact with their medical, surgical, obstetrical, and gynæcological colleagues and the ancillary services which are so essential for the patient and every group of the profession.

Of course there will be serious opposition to such a proposal—sometimes that means that it is a very good proposal. Tradition, sentiment, distance for visiting, etc., etc., will be raised, and even the most virulent political and medical opponents will be united in trying to defeat progress. The great advantages of the reduction in the number of hospitals are so obvious that one wonders why it is opposed. Staffing problems at all levels would be eased, the patient would get a better service, many economies in the service could result, and with consultants, general practitioners, and administrators in daily contact many of the present misunderstandings would vanish.

Robert Louis Stevenson, in defining the ideal physician, wrote as follows:—

> "There are men and classes of men that stand above the common herd: the soldier, the sailor, and the shepherd not infrequently; the artist rarely; rarelier still the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilisation; and when that stage of man is done with, and only to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So that he brings air and cheer into the sick room, and often enough, though not so often as he wishes, brings healing."

Have we, as a profession, in our dealings with the members of the community and the State lived up to R. L. Stevenson's definition of the ideal physician?

We have been referred to as the strongest trade union in the world. Last November Sir Robert Platt, in referring to the part played by the British Medical Association in the formative years of the National Health Service, used some very strong words about this aspect of our profession:

> "The methods of the British Medical Association were those of the trade unionists not appropriate to the leadership of a great profession (as a result) a generation of doctors has been taught to a disparage British medicine, and to speak of the Health Service in terms of contempt."

As a result of our disunity we have, I hope only temporarily, reduced our status with the general public as compared with that of years gone by. We are a group of people who are accustomed to deal with individuals and who like to be treated as individuals ourselves, not en masse as the State prefers. In spite of all this, I believe that the individual doctor, in his relationship with the State and the community, has done his best to merit R. L. Stevenson's commendation.

Yet there is something wrong when the recent survey suggests that, irrespective of political outlook, one-third of the population surveyed would like to opt out of the National Health Service. This means either that the man in the street also wishes to be treated as an individual by the individual of his choice, and perhaps is an indication that, in building new hospitals, an increased number of private beds should be available, or that we, as members of the profession, have lost the human touch when dealing with National Health Service and hospital patients. We must not forget that "When humanity is lost medicine is not a noble career." I believe that the doctors who remember this dictum and who obey the golden rule are still in the large majority and do their best to treat their patients, private or public, in the way they would like to be treated themselves and give most valuable and unselfish service to the State.

There are, of course, black sheep in every profession, and if I may quote from a talk on the Sociology of Work(8), "The newspapers have made us all aware of the defensive or restrictive practices of manual workers. What is not so generally known is that such 'informal' systems of conduct prevail at all levels of industry, in commerce and the professions, as well as in universities, in hospitals, and everywhere that men work together. It is simply not done to betray a colleague's insufficiencies wherever you are employed; and this notion of loyalty, and indeed responsibility to one's colleagues, has resulted in many a director or manager, equally with a machine operator, being 'carried' or otherwise protected by presenting a 'front' of general efficiency to the rest of the enterprise." (J. A. Banks, *Listener*, May 2, 1963, p. 743.)

I really do not mind "the passenger" who says little as he usually leaves you to get on with your own work, but I do object to the vociferous one who tries to convince the outside world that he is much busier than he really is. There is also the type who cries ceaselessly for additional staff, regardless of public expense, because the bigger his staff the bigger his importance. This does not, however, have any regard for the future of his additional staff, e.g., the senior registrar, and does not always mean increased productivity. As the old Chinese

proverb puts it[9]: "One man will carry two pails of water for himself; two men will carry one pail for their mutual use; three will carry none for anybody's use." I am glad to say there are not many of these in the profession.

Our culture is not bifurcated, it is fractured, and how are we to remedy this? Only when we all realise that we, consultants, family doctors, and civil servants, are responsible for each other, we sink or swim together; we are in no position to repudiate any of the mistakes or the frictions that have caused the fracture. In the words of John Donne:

> "No man is an island, entire of itself; every man is a piece of the continent, a part of the main."

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CLINICAL DIAGNOSIS OF POST-OPERATIVE CIRCULATORY DISTURBANCES

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THE SIR THOMAS AND LADY DIXON LECTURE
given in the Royal Victoria Hospital, Belfast,
on 14th February, 1964

THE development of biochemistry and biophysics have in later years given us important tools for estimating the efficiency of circulation and ventilation; we can estimate the oxygenation saturation or the oxygen tension, the pH, bicarbonate and the carbon dioxide tension by punctioning arteries and veins. We can also measure the blood pressure in arteries and veins with accuracy by direct punction and determine the circulating blood volume. We still do not possess instruments for clinical use which can give us reliable informations of the flow through arteries. Again existing instruments are not always available to us day and night and we may find ourselves in situations where they are not available at all; also by using these instruments valuable time may be lost—and that may even prove fatal to the patient. Therefore exact clinical observation and reasoning is still of the greatest importance and, if properly executed, may lead us far on our way to the right diagnosis and treatment.

Some time ago I happened to walk through our receiving station for emergency cases together with an anæsthetist. We found an unconscious man in obvious respiratory distress, lying on a stretcher on the floor, while a perspiring, slightly cyanosed intern was lying on his knees besides the man trying to puncture his cubital vein in order to obtain some exact information. The anæsthetist immediately lifted the stretcher with the patient on to a table, intubated the man, aspirated the fluid which obstructed his bronchi and ventilated him with dramatic effect.

I would like to present the problem I am speaking about today in the following way: You are called some time in the early morning—let us say between 3 and 7 a.m. by a nurse speaking to you over the telephone. You are on duty and she tells you that the patient who was operated upon the day before or two days before has suddenly become ill. She can hardly feel his pulse and she is not sure that she can get the blood pressure. You are, of course, not suggesting any treatment by telephone, but you jump out of your bed and rush over to the department, quickly rehearsing the most probable causes of this sudden change in the patient's health.

Let me first make the comment that it is not very common that a patient gets ill suddenly, and that if it does happen, then it usually is between 11 p.m. and 6 to 7 a.m., because this is the time when the patients are not as closely observed as at other times; not in your hospital, of course, not in mine, but in a hospital elsewhere. If the patient's general condition, his pulse and his blood pressure are observed at regular intervals, sudden changes rarely take place. Such things do, of course, exist as internal bleeding from a major artery, pulmonary embolism, and acute coronary thrombosis, but they are not common as post-operative conditions.

I would mention as the more common causes of the conditions I am referring to: internal bleeding, post-operative shock, heart failure, gastric distension, massive atelectasis, and pulmonary embolism, and I will try to point out the clinical signs which are characteristic of these conditions.

When I speak to my students on this question and ask them what they will do to make the diagnosis, one will suggest to take an electrocardiogram, another one to take the blood pressure, a third one to use a stethoscope, but I would like to emphasize that you must first use your eyes and get all the information you can by that before touching the patient.

Psychic Behaviour.

As soon as you are close enough to see the patient you must notice his psychic behaviour. A bleeding patient is sometimes very quiet and sometimes in great anxiety—even screaming. For a patient in shock it is characteristic that he is in a state of apathy. In heart failure we must distinguish between right-sided heart failure and left-sided heart failure. In right-sided heart failure the patient is dyspnœic, fighting for breath, perhaps sitting up in bed to make the best use of his auxiliary respiratory muscles. In left-sided heart failure, as, for instance, in acute coronary thrombosis, he is quiet, but at the same time in great anxiety, lung œdema may develop with respiratory distress. A patient with gastric distension shows practically all the same clinical signs as a patient in shock. A patient with massive atelectasis is also in a state of anxiety and so is a patient with pulmonary embolism. You will see that the most characteristic observation regarding the psychic condition of the patients is the apathy of a patient in shock.

Respiration.

Next, without touching the patient, you can observe the respiration. A patient with severe bleeding has a quick gasping respiration and a feeling of air hunger. The patient in shock has a quick shallow respiration. A patient with a right-sided heart failure is fighting for air and, as already described, often sitting up, fighting for breath. In left-sided heart failure the respiration will resemble the respiration in severe bleeding and, if lung œdema develops, he is in respiratory distress. A patient with atelectasis has a quick shallow breathing, and very characteristic is the so-called frustraneous cough which may tell you the diagnosis as soon as you

enter the room. The patient with pulmonary embolus is fighting for air and trying to sit up, if he is not too ill to do that.

Skin.

Your visual informations are far from ended here. You will still have to look at the skin. In bleeding the colour of the skin is white as a sheet, or yellowish, like old ivory as it is poetically described in most text books. In shock the skin colour is pale, cyanotic, and wet. The reason for this difference in the colour of the skin I shall mention when we come to the pathology. In right-sided heart failure the skin is blushing red and cyanotic. In left-sided heart failure it is pale. In atelectasis the skin is more or less cyanotic, and so it is in pulmonary embolism.

Veins.

Let us still let the blood pressure apparatus alone for a while and look at the veins. In a patient with severe bleeding the veins are contracted and so are the arteries and capillaries. The veins are actually contracted and may be seen furrowing the surface of the skin as dried-up river-beds when the volar side of the forearm is observed aslant. In shock the veins are also contracted and the blood is pooled in the dilated capillaries. In right-sided heart failure the veins are distended, and this may be best seen on the neck, but also on the hands. In left-sided heart failure the veins are contracted. In atelectasis it depends on the degree of the condition, and in pulmonary embolism they will often be distended because of right-sided heart failure.

By using your eyes alone you have already made many important observations, and if you know what to look for, and you have trained yourself in observing patients, all this—which it has taken me a long time to go through—is a matter of seconds.

Pulse.

Now it is time to feel the pulse, but it will not give you much information, unless the patient has coronary disease, because in practically all these conditions the pulse will be quick and small, but in coronary disease it will usually also be irregular.

Blood Pressure.

The blood pressure is of importance if you follow it regularly, but in the present condition it will be of very little help to you in making the diagnosis. If the patient is bleeding the blood pressure will remain normal for a long time, because most arteries and arterioles will contract in order to keep a sufficient flow through the brain and the coronary circulation. You may have ischemia of the kidneys with a normal blood pressure. We know that a healthy animal can lose more than one-third of its blood and keep a normal blood pressure. When the pressure drops it usually drops quickly. In post-operative shock it is my experience that if you follow the blood pressure at regular intervals you will find that it is falling gradually, and that it is much more uncommon to see it drop quickly as in the bleeding patient. It is extremely dangerous if a patient in shock

has a blood pressure of 70 or below for more than 20-30 minutes. Following this you can often bring the blood pressure up again by giving sufficient transfusion, but you will often find that irreparable changes have developed in the kidneys, liver or lungs from which the patient will ultimately die.

In right-sided heart failure the blood pressure may remain normal, but in left-sided failure it will usually be low. This is serious because the coronary flow will decrease and therefore the blood pressure should be kept as high as possible with vasopressors. In atelectasis the blood pressure varies with the seriousness of the condition. In pulmonary embolism it will be low.

Pathology.

The treatment of these conditions depends on an understanding of the pathology. Time will not permit me to go very deep into this, but I would like to make a few comments.

In bleeding—as already mentioned—the peripheral arteries contract and the tissues suffer from anoxia. Blood transfusion is the obvious treatment and should be started as soon as possible and continued during the operation to stop the bleeding. If blood is not immediately available some sort of plasma expander should be used until blood is available.

Post-operative shock is primarily due to loss of blood and plasma and is characterized by a decrease of circulating blood, capillary dilatation, and dehydration. In this form of shock blood transfusion is the best treatment.

Sufficient blood should be transfused to restore the circulating blood volume. Clinically this is indicated by a normal filling of the veins and the hands and feet becoming warm, dry, and regaining the normal colour of the skin.

The circulating blood volume can now be determined, using the radio-iodinated human serum albumin (1_{131}) as tracer substance. The method is based upon an isotope dilution method and an apparatus, called Volemetron, automatically makes all measurements and computions, and gives the answer in twenty minutes with an accuracy of ± 5 per cent. In open-heart operations, when the blood loss during the operation is sometimes difficult to estimate, this method has been of great help to us.

Sometimes it looks as if the arterioles and capillaries are not able to contract and great amounts of blood are still pooled in the periphery. In such cases a permanent infusion of contracting agents, like aramin or nor-adrenalin, may have a good effect. In other cases it seems that the arterioles are in a sort of spasm. You will then find a patient with white goose skin, cold hands and feet, and hyperthermia. The temperature in the rectum may be 39-40° C. and the skin temperature on the feet around 20° C. In such cases the use of chloropromazine may have a dramatic effect, but you must be ready to pump in blood or plasma expander when the vessels open up, follow the blood pressure, the filling of the neck veins and the temperature, and if necessary put the patient in the Trendelenburg position. This form of treatment has also had a dramatic effect in patients who have been overtreated with nor-adrenalin or if this treatment has been given

on a wrong foundation. By treating patients with shock and hyperthermia with ganglion blockers you will see the patient's skin become red and warm, the skin temperature on the feet go up and the temperature in the rectum fall. The climatic surroundings are important. Observe how the patient is covered, the temperature of the room and the circulation of air. Many problems connected with this have only recently been studied scientifically.

Right-sided heart failure is usually due to increased resistance in the pulmonary circulation. The pulmonary blood flow is still difficult to measure, but with the introduction of right-sided heart catheterization and mediastinal puncture we have at least in recent years learned much about pulmonary pressure and resistance. Many conditions will increase pulmonary resistance and pressure, for example, failure of the left ventricle, mitral stenosis, cardio-vascular changes in the lungs in left to right shunt, pulmonary fibrosis, and emphysema. Such condition may be found both in young and old patients. The old-fashioned treatment was venesection, morphia, and oxygen.

Increased pulmonary resistance with or without right-sided heart failure will reduce the pulmonary ventilation and produce cyanosis (hypoxia) and CO_2-accumulation.

If oxygen is given the cyanosis may disappear, but the respiration becomes superficial and CO_2-retention will increase. The clinical signs of CO_2-retention are: a rise in blood pressure, sweating and drowsiness, ending in coma.

Arterial puncture with determination of the oxygen saturation percentage and the carbon dioxide pressure gives an accurate picture of the inefficient ventilation.

Today we have at our disposal a rational treatment, which has saved many lives. That is early tracheostomy and artificial respiration, either manual or using a respirator, which usually is more efficient and, if necessary, may be continued for days or weeks.

In left-sided heart failure oxygenation of the heart muscle is the main objective. As already mentioned, the blood pressure must not be allowed to drop. Oxygen treatment is important. A new and promising treatment is now in the experimental stage, namely, left-sided by-pass through a heart and lung machine or an arterial pumping device as introduced by Harken in Boston.

The prevention and treatment of atelectasis is today known to everybody, thanks to the pioneering work done in Great Britain.

The conservative treatment of pulmonary embolism is to put the patient up in half-sitting position, administering oxygen and euphyllin.

Pulmonary embolectomy has been taken up again with the aid of extracorporeal circulation. I have very little personal experience. Fortunately pulmonary embolism has become rare, but let me say only that a condition for success is that a patient with severe pulmonary embolism is immediately transferred to the operation room or an adjacent recovery ward, where the doctors who will eventually perform the operation can decide when it is time to do it. It is useless to call the thoracic surgeon when the patient is close to death. Today

the operation should be performed by the aid of extracorporeal circulation and a pump-oxygenator must be ready. If the operation should succeed, experience shows that it should immediately be followed by a ligation of the inferior caval vein below the renal veins to prevent new emboli.

I don't think that I have told you anything that you have not heard before, but I hope to have said it in a slightly different way which may be of use to some of you.

	Bleeding	Shock	Heart Failure (right)	Heart Failure (left)	Stomach Distension	Atelectasis	Pulmonary Embolism
Psyche	anxiety or quiet	apathy	anxiety	anxiety	apathy	anxiety	anxiety
Respiration	quick, snapping air hunger	quick shallow	sitting fight for air	quick shallow	shallow	quick shallow frustration cough	sitting up fight for air
Skin	white, yellow	pale bluish wet	red-cyanotic	pale	pale bluish wet	cyanotic	cyanotic sweating
Veins	contracted	contracted	distended	contracted		normal	distended
Pulse	small, quick	small, quick	fair	small, irregular	small	quick	small, quick
Blood Pressure			normal	low	low	normal	low
Pathology	lack of circulating blood dehydration	capillary dilatation	high pulmonary resistance	coronary disease	reflex?	obstructed airways	pulmonary arterial spasm
Therapy	blood transfusion plasma expander hæmostasis	blood transfusion ganglion block. agent oxygen	morphia venesection oxygen sitting position trache-ostomy and respirator	oxygen nitroglycerin left by-pass vaso-pressor	aspiration	bronchial aspiration physiotherapy	oxygen sitting up euphyllin embo-lectomy

GROUP MEDICAL PRACTICE

By GEORGE A. DONALDSON, M.B., B.Ch.

Based on an address to the Society of Medical Officers of Health, Northern Ireland Branch, January, 1964

A DEFINITION of a group practice might well be given as follows:—A group medical practice is one in which two, three, four, five or more family doctors combine to work as general practitioners from a main consulting room centre. A branch surgery or surgeries may also be required depending on the distribution of the patients geographically. Ancillary staff in the way of receptionists, caretakers, and cleaners would be required and close liaison should be established with the relevant local authorities regarding attached health visitors, social welfare workers, district nurses, and midwives.

The development of this type of practice in Northern Ireland has recently been greatly accelerated and statistics as at 1st January, 1964, show the following picture:—

Total number of groups = 13, distributed over Northern Ireland as follows:—

BELFAST:	CO. DOWN:
4 groups of 3 doctors	1 group of 3 doctors
1 group of 6 doctors	1 group of 4 doctors
	1 group of 6 doctors
CO. ANTRIM:	DERRY CITY:
1 group of 2 doctors	1 group of 3 doctors
1 group of 3 doctors	CO. TYRONE:
1 group of 8 doctors	1 group of 5 doctors

These practices involve a total of fifty-two family doctors. Nine of the groups are operational, the remainder being in the process of formation. All have been formed with the help of the Government Interest-free Loan Scheme and the total loan approved as at 1st January, 1964, amounted to £92,139.

Perhaps the best way to discuss this new concept of general practice would be to give, firstly, a brief outline of the planning and organisation necessary in starting a group practice of say six doctors, and, secondly, to follow on with some relevant remarks about the group scheme in the light of the recent Gillie Report on "The Field of Work of the Family Doctor."

I. PLANNING AND ORGANISATION.

Immediately the Northern Ireland General Health Services Board announced the interest-free loan scheme to encourage group practice six family doctors in

the South Belfast area met to discuss the possibilities of forming a group. This was the first attempt to form such a practice under the proposed loan scheme. It was decided to apply for the maximum loan, i.e., £2,000 per doctor and, after submission and approval of the architect's draft plans, the sum of £12,000 was granted, free of interest, to be paid back at the minimum of £100 per annum each doctor.

Before the final plans were submitted to the Health Board three of the doctors concerned, in company with the architect, the medical adviser to the Board, and a Ministry of Health senior medical official, went to Scotland and visited several groups in and around Edinburgh and Glasgow. Later a visit was paid to different practices in England, e.g., Derbyshire House in Manchester and a large group in Skipton. These visits were helpful in that the good aspects in the practices were noted and the bad points were assiduously avoided in planning the new venture. Many long nights were then spent over drafts of the architect's plans. To accommodate six doctors, a resident caretaker, receptionist staff, a health visitor and patients in an "oldish" house created quite a few problems. Generally speaking, all available space was made use of to the greatest effect, but one room missing is a treatment room which would be an essential if an attached nurse were to be fully employed.

Accommodation Provided.

As well as purchasing the house in South Belfast a bungalow on the periphery of the area, just outside the city boundary, was obtained. This was considered expedient, since all the doctors concerned had a number of patients in that area and there was no doctor established in the immediate surroundings.

The accommodation available in the main surgery is as follows:—

(1) Four consulting rooms, two on each floor; those on the ground floor have an examination room shared between them, while the two on the first floor each have an adjoining examination room. This means there are seven examination couches available.
(2) Reception and office block; the former has seating accommodation for sixty patients and the latter accommodates three receptionists, all filing cabinets with patients' records, switchboard, and typing desk.
(3) Small laboratory—here urine testing, etc., is carried out and all vaccines, sera, etc., are refrigerated.
(4) Patients' and staff toilet accommodation.
(5) Health visitor's room.
(6) Staff room.
(7) Caretaker's flat on top floor—separate fire-escape stairway is provided from here.
(8) Car park at rere for six doctors' cars.

Equipment and Furnishings.

All consulting rooms, office, staff room and caretaker's flat are equipped with telephones and also with an internal telephone system.

In all the practices visited in England and Scotland only the examination rooms had examination couches, but it is well worth while having them in consulting rooms as well.

The interest-free loan for furnishings only applies to fitted furniture, so built-in cupboards and built-in seating accommodation is provided as far as possible. It was eventually decided to install electric storage heaters and radiant wall heaters.

Surgery Hours.

Since three of the doctors had already been in partnership for many years, it was decided this partnership should remain intact. Two of the other members had also been many years as partners and the remaining doctor amalgamated with them to form a new partnership. Thus there are two partnerships, each of three doctors working as a group under the same roof. It was decided that separate cards should be distributed to patients showing the consulting hours of each partnership. At present these show set surgery hours, morning and evening, plus consulting hours in the afternoons by appointment only. Normally each practice attends to its own patients, but in emergency, or during rota hours, this, of course, does not apply.

Finances.

Architect's and lawyers' fees were an initial heavy expense and these are not covered by the loan under the present regulations. However, since the purchase of the main surgery and the branch, coupled with the builder's charges, etc., exceeded the total loan, it didn't much matter, and the money had to be found elsewhere. More can be considered on the question of finances when relating the Gillie Report to the experience of this group. Running expenses are shared equally between the two partnerships.

II. The Gillie Report in Relation to Group Practice.

After the preceding brief outline of establishing a group practice, it is interesting to compare it with the recommendations and suggestions contained in the recent publication, "The Field of Work of the Family Doctor."

The Family Doctor and the Obstetric Service.

Here the Gillie Report stresses the need for many more available posts so that young doctors after qualification can have resident obstetric appointments of at least six months' duration. The importance of repeated resident refresher courses for older and established family doctors is also stressed, but the effort is largely a waste of time if they are not permitted to carry out any practical midwifery whatsoever. In fact, some consultants have insufficient resources to instruct students and housemen without the addition of resident general practitioners.

General practitioner maternity units are given priority in the report and certainly the Malone Place Unit in Belfast has been invaluable. A second unit at the old Ulster Hospital in Templemore Avenue will be more than welcome.

In this group mothers are either confined at home, in general maternity hospitals, in private nursing homes in a very few cases, or in the general practitioner maternity units. Patients have ante-natal examinations carried out by their own family doctor by appointment in his own consulting room just as in the past, except that there is now the advantage of the health visitor and social welfare worker to help in the educational and social side of the work. At present a midwife is not present at these examinations, but this may be rectified very soon.

The Family Doctor and the Mental Health Service.

The Gillie Report wisely lays great stress on this subject in present-day general practice: one would have to give up a large proportion of one's general work to attend to this thoroughly. Certainly in the past decade drastic changes in undergraduate psychiatric training have been required to equip the family doctor for his present-day need.

Members of the group in question do frequent week-end courses in mental health, and in conjunction with the Belfast Division of the B.M.A. numerous visits to Purdysburn Mental Hospital and the new Day Hospitals are arranged on Sunday mornings. Thus the family doctor is trying to keep abreast of changing views and trying to refresh his knowledge in at least the fundamentals of psychiatric medicine.

The mental health aspect of work in this group is greatly benefited by having the services of a health visitor who helps in following up and rehabilitating all the psychiatric patients on discharge from mental hospitals. This contribution from the local health authority has proved of the greatest benefit to the practice and one has actually to work in such a team to prove how valuable such attached trained personnel can be.

The present arrangements for consultations both in hospital and domiciliary cases seem satisfactory, except that the delay in the former is sometimes too prolonged. The newly opened Day Hospitals are very valuable.

Gillie states that a closer association of psychiatrist, local authority staff, and family doctor is essential, but the greatest beneficial effect has been the help of the local authority in Belfast in providing the valuable link of the psychiatric-trained health visitor.

The Family Doctor and Research.

The group practice in South Belfast is actively concerned in this. All the members are registered with the Central Research Body of the College of General Practitioners. Two members, accompanied by the Lecturer in Social and Preventive Medicine, Queen's University, visited the headquarters in Birmingham and had a most enlightening day with the Research Adviser to the College, Dr. R. J. F. H. Pinsent, who has since become a member of the Annis Gillie Committee.

The group helps to form a research committee in general practice, which is guided by the Professor of Social and Preventive Medicine, Queen's University.

The Professor of Medical Statistics, Queen's University, the Lecturer in Social and Preventive Medicine, and a Nuffield Hospital Trust Fellowship nominee for general practice research make up the remainder of the Committee.

At present, after eighteen months spent in planning a survey, a Male Cohort Study has been commenced involving all male patients in the group between the ages of 45-54 years. This entails a long questionnaire on habits, history, urine analysis, blood pressure recording, clinical examination, X-ray chest, E.C.G. examination, weight and height measurements, fasting blood cholesterol and lipids. All this, except the chest X-ray and the actual blood chemistry, is carried out in the group surgery. Dr. J. F. Pantridge is the adviser in cardiology and interprets all the E.C.G. recordings and Dr. D. A. D. Montgomery kindly arranges glucose tolerance tests in the Metabolic Department, Royal Victoria Hospital, on all those cases which exhibit glycosuria. The X-ray examinations are carried out by Dr. D. W. Wallace at the Tuberculosis Institute, Durham Street, Belfast. This survey will entail the examination of between 700-800 men and much planning and organisation has been put into the effort.

In the Gillie Report there is a recommendation that no financial obstacle should be put in the way of research in general practice. What with help from the Nuffield Provincial Hospital Trust and from the College of General Practitioners, if required, there should be no personal cost, but the more important factor is that of finding the time to devote to all such exercises.

During the past year statistics have been compiled in the group of all personal consultations, all certifications, telephone consultations, urine analyses, day and night domiciliary visits, new calls, repeat calls, referrals to hospital externs, hospital admissions, etc. If these figures did nothing else, they at least showed the different ways in which six individual doctors can work. This, of course, is always a very variable factor in general practice and is dependent on the habits, the personality, and the conscientiousness of the doctors concerned.

Before commencing any research project in general practice one must have an efficient Age-Sex Register. This may be either in the form of a loose-leaf system or in a card index form housed in metal filing cabinets. The receptionists keep these up to date from day to day, as transfers, additions or deletions due to death occur in the practice.

The Work of the Family Doctor outside the N.H.S.

Gillie and her co-workers appear to favour this. In this group most members have various outside medical interests, such as a part-time general practitioner appointment in hospital, a school medical officer appointment, membership of hospital management committees, visiting physician to welfare homes, etc. Some members take a very active interest in medico-political work and B.M.A. administration.

Organisation within the Practice.

Under this heading the Gillie Committee covers much more space than in most other aspects of the report, due no doubt to the fact that organisation forms the

keystone to any group practice. One has to be organised oneself before organising premises, plus a mixed assortment of about 12,000 men, women, and children.

The general organisation as to buildings, ancillary staff, and consulting hours has already been briefly mentioned, but controversial points are always bound to arise, e.g., the most efficient method of summoning the patients to one's consulting room. At present this is done by a buzzer and light system, each doctor having a light in the reception area to correspond with the colour of his consulting room door. However, all sorts of methods are used by different groups and all appear to have their own particular drawbacks.

The fact of the practice premises being apart from the doctors' private dwellings is certainly a great boon especially when one is off duty; now the family doctor can almost feel like the businessman away from his office, the hospital consultant away from his hospital, or the public health medical officer away from his division or county. As Gillie points out, this means in most cases a resident caretaker and, in the practice with a branch surgery, a second caretaker may be necessary.

To have sufficient time for one's own clinical work means delegating every item one possibly can to ancillary staff of some type. This, if one is to have the best, may be a heavy financial burden and the family doctor with a medium list may find it too heavy to carry. In the practice under consideration it was eventually agreed to have a senior receptionist-secretary with some years of experience and two juniors, who, it was hoped, would prove efficient with training. As the juniors learn and remain in the practice, they in turn naturally expect higher remuneration and this again contributes to the gradually rising practice expenses.

Another controversial point is the appointments system. In most of the groups visited in England and Scotland full appointment systems were in operation and, so far as one could see, operating perfectly smoothly. The large group in Skipton is an example and the working of its system was recently demonstrated on a television programme. In the South Belfast group there were conflicting opinions about taking the sudden plunge into a group practice and into a full appointment system at the same time. Evenually a compromise was made by having the usual morning and evening surgeries with an appointment system for afternoon sessions only. Possibly, on reflection, this was a mistake and the group should have become operational from the first day with a full appointment system. Ante-natal appointments are always given and inoculation sessions are arranged by appointment.

As mentioned earlier, much time had to be spent in planning the renovation of the practice premises. Gillie stresses this subject and the costs pertaining thereto. She also stresses that these costs can be "wholly disproportionate to the income available from the practice." In this group the maximum interest-free loan was obtained from the Health Services Board, but this did not meet the financial requirements and several more thousand pounds had to be found. Thus, probably, the situation will eventually be reached, as exists in the Skipton practice, where, in the event of one member leaving the group, a new member being

admitted may have to find several thousand pounds to buy out the share of the premises and fittings of the outgoing partner. On top of this, he would have to find a private dwelling-house.

On reading the group agreement with the Health Board, it would appear that if a member leaves the group the remaining members must recompense that member to the value of what he has put into the practice and premises and also take over the remaining portion of his commitment to the Health Board. The new partner must then take this over from the other members *or* the Board *may* form a new agreement. In this connection the Gillie Report states:—"We understand that mortgages cannot be arranged for an incoming partner wishing to purchase a share of the practice premises apart from any portion used for residence." This would appear to mean that the new member would have to find the total value of the share of the premises owned by the outgoing partner.

Gillie says that local authority staff attached to a practice will require accommodation in the practice premises. This is perfectly true, and it is an ideal working arrangement whereby the health visitor has her own room where she keeps her records and, if necessary, interviews patients or relatives. At the same time she and the social welfare worker have free access to all practice records and join the doctors each morning for coffee and an informal chat on any case requiring consideration. A district nurse from the local authority staff would be most valuable. Surely such an attachment to a group of six family doctors would give a much better all-round service to everyone instead of the present system. A treatment room would therefore be necessary, but, unfortunately, at the moment, this practice has no such space available. Gillie states that her committee found it required a group of four or more doctors to obtain the maximum advantage from a full-time qualified practice nurse.

Personal Relations and Communications.

Under this heading the report states:—"However good its organisation may be, a general practice cannot work well without good personal relations. The family doctor can mobilize any part of the Health Service for the advantage of his patient." Again one must acknowledge just how little the average family doctor knows about the work of the health visitor and the social welfare worker. Since these ladies have been seconded from the local authority to this practice all the members confess they have learned a lot on this aspect of general practice. If informal meetings could be arranged between local authority personnel and family doctors generally it would certainly prove of benefit to general practice as a whole.

Group Practice and Health Centres.

Apparently this is a project in which the Gillie Committee had a particular interest and it is gratifying to know that within a short time such a centre will be in operation in the South Belfast area. The General Health Services Board, the Ministry of Health, the Belfast Local Authority, and the Hospitals Authority are all co-operating in this pilot venture which will be organised by a House

Committee comprised of the following:—The Professor of Social and Preventive Medicine (Chairman), representatives of the Health Board, the Hospital Authority, the Ministry, the Belfast Local Authority, two representatives from the general practitioners in the area, and a representative of the group practice in the area.

The only premises obtainable were two houses adjoining the group practice and these are now in the process of renovation. Broadly speaking, the premises when completed will include the following:—Reception and office block, antenatal department, treatment room, laboratory staffed by the Hospital Authority, X-ray room with radiographer attached, consulting rooms, tutorial room for undergraduate teaching under the Professor of Social Medicine, common staff room. Probably other subjects, such as physiotherapy and chiropody, may be catered for and a room will be allocated for health and social welfare work. In phase II of the project there may be sessions attended by consultants in surgery, medicine, and psychiatry.

This unit will be designated for the use of all the family doctors in the area, and, if it proves a success, should make general practice very much more interesting and efficient for all concerned. If successful perhaps other such units will follow in North, East, and West Belfast, to be followed also by similar centres throughout the Province.

Distribution and Career Prospects of Family Doctors.

In the visits to English and Scottish practices it was surprising to see the size of the average family doctor's list. There certainly was not one of them with anywhere near the maximum allowed except perhaps a group in Edinburgh where a group of seven doctors had a list of around 19,000 patients. None of the others visited appeared to be above the English overall average of 2,300 patients.

In this group it is felt that a list around 2,000 is about the maximum one doctor could cater for in an efficient manner. This therefore does not place one in the higher income bracket, and it must be accepted that to attain a reasonable standard of work in present-day general practice in reasonably appointed premises, one has not only to spend money on such premises but one has also got to aim at keeping one's list at a low average level. In other words, to gain financially in modern general practice, one requires a list which could be too large to care for properly, or else one keeps a medium list with a consequent poor material return but with a more satisfying and interesting job of work as one's main remuneration.

During term time students are periodically attached to members of the group. They "sit in" at surgery hours and may accompany the doctors on domiciliary visits. The reaction of a large proportion of these students to group practice is surprising. Many arrived with the idea of dull, drab waiting-rooms and surgeries and probably expected general practioners and their work to be similar. It is gratifying to find that many of them leave the group thinking that perhaps general practice is not so bad after all and, instead of adhering to their thoughts of future embryo consultants or public health specialists, some might even deign to become general practitioners like their fathers before them.

Modernised premises in pastel shades do not necessarily mean the practice of

good clinical judgment and one can stagnate professionally in such a place just as readily as in a dull isolated surgery "in the back of nowhere." It is therefore essential to participate actively in as much post-graduate experience as possible, including ward rounds, week-end courses, extended courses and as much reading of current medical advances as time permits.

The Family Doctor and the Public Health Service.

The Gillie Report states:—"Care in the community provided through the Health and Welfare Services supports and is supported by the medical care given by the medical practitioner." Surely these words mean that these services together must form the basis for the best type of service to the community. Again one must emphasise how this can best be achieved by working in the modern group practice environment in contact with local authority ancillary staff.

The report states that the best co-operation can be secured by the attachment of nurse, midwife, health visitor, and social worker to individual practices. One difficulty is that local authority staff seconded from the Belfast Authority is not authorised to help in regard to patients outside the city boundary. Yet in England it would appear that in county appointments the attached personnel is not strictly limited to the county boundary line. No doubt, if this group had sufficient patients in Co. Antrim or Co. Down, the relevant authority would consider the full-time attachment of its personnel.

When the Health Centre in South Belfast area eventually becomes operational it will be gratifying to see the education or re-education of all the family doctors in the area as to the full and proper utilisation of the Public Health Services. Certainly the common staff room should be the ideal rendezvous for informal talks on these lines.

Most members in this group periodically attend open discussions in the Department of Social and Preventive Medicine following a student's attachment in the practice.

The way in which some students give case histories of domiciliary welfare cases they have visited in their course of instruction on social medicine can be most impressive. It surely augurs well for the future of the co-operation between the Public Health personnel and the family doctor in the new general practice of the future.

Advantages and Disadvantages of Group Practice.

Firstly the advantages:

(a) Gone should be the dreary old surgery premises of previous years and surely the brighter environment alone should, to some extent, help both patient and doctor.

(b) With an appointment system, or partial appointment system, long periods spent in the waiting-room should be avoided.

(c) Emergency calls unattended should be practically non-existent, since at least one doctor out of a group of six can usually be contacted in a hurry.

(d) Doctors working as a group and in unison should be a help to each other so far as sharing the work is concerned; this, of course, does not overcome the problem of a particular doctor working at twice the speed of a colleague.

(e) The daily morning coffee in the staff room, in company with the health visitor and social worker, can be most enlightening and helpful. Also the fact of being able to discuss one's medical problems with colleagues helps to lighten the load. A routine monthly meeting is a necessity to discuss organisational problems, finances, research projects, and any other subject pertaining to the day to day working of the group.

(f) Any research project undertaken is helpful to all members because of its stimulating effect to more modern thought.

(g) Holidays can usually be looked forward to without the added financial burden of having to provide a locum. A rota system for night work and week-ends is most welcome.

Secondly the disadvantages:

It would appear there are none of serious consequence, but one must not think that say five or six doctors can suddenly band together and form a smooth working team. In this group five of the members had worked in adjoining houses for many years and had acted for each other on weekly half-holidays and sometimes for summer vacations; the sixth member had participated in a week-end rota for many years.

It would be hopeless to find within a few months of organising a group that incompatibilities existed because of a clash of personalities. Different views and opinions will certainly often be held but members must agree to differ.

Some people might say that a loss of doctor-patient relationship would be liable to arise. In the present case this is unfounded, as the patient, just as in former days, chooses the doctor he or she desires within the partnership concerned—there should be no effort, in any way, to coerce patients to see another doctor except in cases of emergency or absence.

Finances in Group Practice.

This is a complex subject and one which it is hoped may be solved in the near future when conditions of service and remuneration are discussed by the Review Body. It seems entirely erroneous that, in this present age of a Welfare State, a doctor or group of doctors must practically beggar himself or themselves in the act of trying to provide what should be the best type of service for the benefit of the community. By this it is inferred that, with all the millions being spent on the hospitalisation programme, one could surely expect the odd million to be diverted to a scheme to improve the premises and equipment of the family doctor service. It should not be considered a very grandiose gesture on the part of the Government to offer the general practitioner an interest-free loan and leave the matter there. In the practice under review the maximum loan was

obtained as already stated, but several thousand more pounds were required to launch the group. Running expenses have proved high and up to the present would appear to be in excess of those required to finance the older type of partnership practice.

In short, endeavouring to provide a reasonably good and efficient service to the public has meant that one's own personal income, little as it may be, has to suffer. Please bear in mind that, as a group, the members consider a maximum list which could be run efficiently is around 2,000 patients for each doctor. Small wonder that one hopes for great things from the deliberations of the Review Body and the profession's representatives. The Gillie Report on this matter says: "When the family doctor improves his premises or equipment or employs more ancillary help he has less money to spend on other purposes."

Conclusion.

One must wholeheartedly agree with the Gillie Report in saying that never before has the family doctor, and especially the family doctor in group practice, had such an opportunity for co-ordinating family practice with the Local Authority Services. The two together should provide a community service second to none. Add on the third member of the team, the hospital service, and the general community should have a first-class health service in Northern Ireland, which would be difficult to surpass. This optimistic picture can, however, only be attained when the family doctor service is granted reasonable and fair conditions and terms of service.

Summary.

A modern group practice is briefly discussed in regard to its initial planning and organisation, its financial commitments, and its advantages and disadvantages. The group system is further discussed in correlating to this practice the recommendations and suggestions contained in the recent Gillie Report.

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DEEP THROMBOPHLEBITIS OF THE LOWER LIMBS

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Introduction.

Deep thrombophlebitis of the lower limbs is diagnosed clinically. Phlebograms are difficult to interpret and of little practical value. Deaths from pulmonary embolism and the disability of the post-phlebitic syndrome emphasize the importance of early correct diagnosis. This paper presents the clinical findings on which was based a diagnosis of thrombophlebitis in twenty patients, records their response to treatment, and discusses the diagnosis of this disease.

The patients were unselected, other than being admitted to the Peripheral Vascular Service of the Graduate Hospital, University of Pennsylvania, over the six-month period from 1st November, 1962, to 30th April, 1963. Sixteen patients were women and four men. Patients did not predominate in any one age group, the youngest being sixteen years and the eldest being seventy-seven years.

Symptoms.

Nine of the patients had symptoms of less than two weeks' duration, three from two weeks to six months, and eight over six months.

Pain.

The commonest symptom was aching in the calves, usually more severe in one limb than the other. The patients used the words ache, tiredness, or soreness, and none referred to sharp pain. The ache was minimal or absent in the morning, increased in severity throughout the day, was aggravated by exertion, and especially by standing in one position for a prolonged period. The majority of those having symptoms of more than six months' duration had learned to obtain relief by lying down or sitting with the legs elevated. Two patients had their thrombophlebitis complicated by the symptoms of meralgia paræsthetica (Knox, 1963).

Limb Swelling

Ten patients complained of swelling of one or both lower limbs. Activity was again an aggravating factor. With bilateral swelling it was dominant in one limb. Aching calf pain was often present for some time before the onset of swelling.

Muscle Cramps.

In two patients recurrent cramps of the calf and feet muscles caused most discomfort. Unlike pain and swelling, the severity of the cramps was maximum during resting.

Signs and Method of Examination.

The signs are presented in the order of frequency in this series (see Table).

TABLE.

Signs of Deep Thrombophlebitis of the Lower Limbs.

	Stage of Therapy.				
	Admission No.	Third Day No.	Sixth Day No.	Ninth Day No.	Discharge No.
Vein Tenderness.					
Groin	11 (32)	10 (29)	6 (18)	3 (9)	0 (0)
Femoral Triangle	13 (38)	12 (35)	8 (24)	5 (15)	1 (3)
Adductor Area	24 (70)	23 (67)	19 (57)	15 (44)	11 (32)
Popliteal Fossa	9 (26)	8 (24)	8 (24)	5 (15)	1 (3)
Calf	28 (82)	27 (79)	22 (65)	21 (62)	13 (38)
Foot	4 (12)	4 (12)	2 (6)	0 (0)	0 (0)
Tibial Tenderness.					
Upper Third	19 (57)	8 (24)	2 (6)	1 (3)	1 (3)
Middle Third	23 (67)	18 (53)	13 (38)	7 (21)	1 (3)
Lower Third	22 (65)	16 (47)	14 (41)	11 (32)	5 (15)
Homan's Sign	12 (35)	9 (26)	4 (12)	1 (3)	1 (3)
Muscle Induration	8 (24)	8 (24)	3 (9)	3 (9)	1 (3)
Œdema	7 (23)	6 (18)	3 (9)	2 (6)	0 (0)

Percentages, to the nearest whole number, are stated in brackets, and based on a total of thirty-four limbs.

Selective Vein Tenderness.

The soles of the feet and behind medial malleoli were palpated to detect plantar plexus thrombosis. With the patient's knee flexed and the foot plantar flexed tenderness was sought between the relaxed bellies of the gastrocnemius muscle. Palpation was continued upwards into popliteal fossa, adductor thigh, and femoral triangle precisely over the course of the popliteal and femoral vein. Finally, pressure was applied, both lateral and medial, to the femoral pulse seeking for selective tenderness medially over the femoral vein. It was important to press not only over the course of the veins but to use a similar pressure to other areas of the limbs before deciding on the significance of this sign. In the 40 limbs examined tenderness was present in the calf in 28, in the adductor area in 24, in the femoral triangle in 13, over the femoral vein at groin level in 11, in the popliteal fossa in 9, and in the soles of the feet in 4.

Lisker's Sign (Tibial Tap Sign).

The broad subcutaneous surface of the tibia medial to the crest was percussed with the flexed fingers as in direct percussion of a chest. Bone tenderness was recorded as a positive sign. If one was in doubt as to the presence of tibial tenderness the response to tibial percussion was compared to that of patellar percussion. If the patient was equally tender to percussion in both areas one regarded the tibial response as insignificant. Twenty-six limbs had tibial tenderness. In fourteen the tenderness was evenly distributed throughout the length of the tibiæ, in ten it was more severe over the lower two-thirds of the bone, and in only two was the tenderness greatest in the upper area of the bone.

Homan's Sign.

This sign was elicited by examiner placing his left hand on the thigh above knee-level to ensure knee joint was fully extended, grasping the foot with the right hand and forcibly dorsiflexing the foot. A response of pain in the calf muscles was recorded as positive, a response of no pain or pain in any other area as negative. Twelve limbs had a positive Homan's sign.

Muscle Induration.

Calf muscle induration was assessed by two methods. By the first method one grasped the mid-leg anteriorly with the right hand and applied gentle upward pressure to the calf muscle mass with the left hand. By alternate squeezing and relaxing the mid-leg with the right hand one felt the degree of induration with the left hand. Secondly, the patient lay prone and the calf muscle mass was palpated by gentle downward pressure with the palm and fingers. Induration was detected in nine limbs.

Œdema.

Eight patients had pitting œdema. Although some had complained of swelling of both legs, in none was the œdema bilateral. Records of findings were completed on admission and no account was taken of the time of day of examination or previous activity during the same day. Both would have been significant in assessing this finding.

Skin Temperature.

This was assessed by examiner placing the back of the hand on skin of each limb. The sensitivity of one's hand to temperature could be increased by first placing the hands for a few minutes in cold water. The skin temperature was elevated in two and reduced in one. The latter had associated arterial spasm.

Pyrexia.

Two patients had temperatures above normal which subsided within four days.

Treatment.

Position and Activity.

All patients were confined strictly to bed with no bathroom privileges. The lower limbs were elevated, with an angle of twenty-five degrees to the horizontal

and a slight degree of flexion at knee-joint level. Bed rest was continued until all signs of the thrombophlebitis had disappeared or had become static, and no further improvement was expected. At this stage the patients were gradually allowed up, at first to sit in a bedside chair for one hour twice daily with legs elevated, then walk for five minutes three times daily, and finally to walk freely. Standing and dangling of the lower limbs were discouraged.

Anticoagulation.

Eighteen patients received intravenous heparin every eight hours, the dosage being 50, 75 or 100 mgs. per injection depending on individual weight and age. Because of obesity and difficulty with intravenous administration one patient received heparin subcutaneously 100 mgs. every twelve hours. The most satisfactory site for subcutaneous heparin was found to be the anterior abdominal wall, being given by the "Z" technique. One elderly patient was given 25 mgs. of heparin subcutaneously every twelve hours. Two Lee White estimations were performed, one prior to commencing heparin to alert one to the possibility of a coagulation defect, and one an hour before the third dose of heparin to exclude undue sensitivity to the drug. There was an individual variation in the duration of heparin therapy, as it was always maintained until the patient was walking without restriction. The dosage was then reduced with a twice daily, and finally a daily dose before termination.

Other Drugs.

Patients with recurrent symptoms of more than six months' duration were given two Papase tablets three times daily. These contain an extract of proteolytic enzymes from Carica papaya. Complaints of muscle cramps were relieved by either Benadryl 50 mgs. three times daily or Soma (carisoprodol) one 350 mg. tablet four times a day. Some patients received simple analgesics and sedatives for the first few days after admission.

Limb Support.

Patients with histories of limb swelling or limb œdema on admission had 4-inch crepe bandages applied from the base of the toes to knee-level. Bandages were not worn while in bed at any time, and only applied prior to patients being allowed out of bed.

Antibiotics.

One patient with an associated cellulitis received intramuscular penicillin 500,000 units eight hourly for ten days. None of the others received antibiotics.

Response to Treatment.

The twenty patients had the lower limbs examined daily by one observer and a record kept of the presence or absence of the signs already referred to. For the patients hospitalised purely for the treatment of their thrombophlebitis the average duration in hospital was nineteen days, the shortest being ten days, and the longest thirty-two days. Each of the seventeen patients' records were studied

on the third, sixth, ninth days of treatment and on the day of discharge. The response of signs to treatment is presented in the Table.

Deep Vein Tenderness.

In the third day of therapy vein tenderness showed little response, but began to disappear between the third and sixth days. This improvement continued through the ninth day and on discharge, of the twenty-eight limbs that had an initial tenderness in the calf thirteen had residual tenderness, and of twenty-four with adductor tenderness eleven had residual tenderness. In these patients the degree of residual tenderness was slight.

Lisker's Sign.

Tibial tenderness over the upper third of the bone responded more rapidly than the lower two-thirds. A small number had tibial tenderness when discharged, but, like vein tenderness, this was recorded as much improved compared with that of the initial examination.

Homan's Sign.

In the twelve limbs with a positive sign, nine were positive on the third day, four on the sixth day, one on the ninth day, and one on discharge.

Œdema and Induration.

These signs disappeared between third and sixth day and were absent from all patients on discharge.

Four of the eight patients, who had had recurrent symptoms for more than six months prior to admission, had no residual signs.

Discussion.

The diagnostic criteria for deep thrombophlebitis of the lower limbs not only varies from hospital to hospital, but between physicians in the same hospital. The frequency with which a physician diagnoses this condition depends on his degree of suspicion as to its presence, his accepted criteria, and the thoroughness of the physical examination. The "disease" may be "over-diagnosed" by some physicians, and "under-diagnosed" by others.

The association with mechanical trauma, surgery, congestive heart failure, childbirth, bacterial and viral infections, blood dyscrasiæs such as polycythæmia, ischæmic limbs, collagen diseases, and carcinoma is well known. Often thrombophlebitis is idiopathic. That the patient with idiopathic thrombosis may later develop Buerger's disease may be suspected, but in follow-up studies this is rarely true. A history of soreness of the calves, extreme tiredness of the legs in the evenings, the aggravation of these symptoms by exercise and their relief by rest should always alert one's suspicions of a thrombophlebitis. Increasing swelling of the limbs throughout the day especially of unilateral or of uneven degree between the limbs is significant. Muscle cramps of the affected limbs, or the burning pain over the lateral thigh of meralgia paræsthetica may be a presenting factor.

That these symptoms have recurred over a period of months or even years does not make the diagnosis any less probable.

As one would expect with inflammation of veins selective tenderness over their course is the commonest sign. Thrombosis confined to the plantar plexus manifested by tenderness of the soles and behind the medial malleoli can be a source of pulmonary emboli. Calf tenderness may be due to other causes than thrombosis, for example, peripheral neuropathy, herniated lumbar intervertebral disk, or ischæmic muscles. The tenderness of the ischæmic muscles is often relieved within twenty-four hours by elevating the head of the bed six inches on blocks, while phlebitic tenderness would increase. Deep limb reflexes, test of skin sensation, Lasequé's sign and Patrick's sign are a routine in examination for lower-limb pain. The association of thigh tenderness precisely over the course of the femoral vein increases the significance of calf tenderness as a sign of thrombophlebitis. In searching for selective tenderness, especially in the thigh, it is important not to press more forcibly over the suspected vein course than in the other thigh areas. Some patients are hypersensitive to palpation in any area of the limb.

Lisker's sign is a useful sign but not widely recognised. Occasionally a patient complains of persistent pain in the shin and the only positive limb finding is tibial tenderness. That this is thrombophlebitic in origin is suggested by the fact that this symptom, which may have been present for weeks or even months, is relieved by the treatment regime already described. The first patient in which this sign was suspected of being associated with thrombophlebitis was of this type and confirmed the diagnosis with pulmonary embolism and later an excellent response to therapy (Lisker, 1962). The tenderness is more common and more acute in the lower two-thirds of the tibiæ and also resists therapy longest in this area. In a traumautic thrombophlebitis bruising of the superficial tissues over the tibiæ limits the value of the sign. The underlying mechanism for the tibial tenderness has not yet been established. It is suggested that the bone tenderness is due to an increase in inter-osseous pressure resulting from venous thrombosis and obstruction of blood flow from the bone.

Homan's sign remains valuable as an aid to diagnosis. In patients accepted in this group as suffering from thrombophlebitis its frequency is less than Lisker's sign. Herniated lumbar intervertebral disk or other root affections in the lumbo-sacral area may produce a positive Homan's sign but will usually also have a positive Lasequé's sign.

Pitting œdema in thrombophlebitis is due to venous insufficiency and denotes the degree and position of venous pathways involved, as well as the presence of venous occlusion. Life-endangering thrombophlebitis may be present without œdema. A demand of œdema as an essential criterion for the diagnosis of thrombophlebitis is akin to the demand of a raised blood urea level for the diagnosis of a kidney disease.

Induration of calf muscles should be carefully sought for. Although present in only a small proportion of this series, when recognised, it indicates in the

majority an active or previous thrombophlebitis. Patients with recurrent thrombophlebitis often have hard nodular calf muscles so that maximum calf measurement on the affected limb can be less than the healthy limb.

Changes in skin temperature are of limited value. The diagnosis is not in doubt in the hot tender limb. Arterial spasm accompanying the thrombophlebitis may produce a cold limb, and infrequently a patient complains of a cold wet foot. In the cold blue swollen limb of phlegmasia cerulea dolens arterial spasm is the emergency to be dealt with. One of the patients in this series had a mild arterial spasm for twenty-four hours but no special treatment was given, relaxation occurring spontaneously.

The distribution of the signs in the limbs follows no particular pattern. It is unusual, however, to find an evenness of distribution such as to have in both limbs calf tenderness, a positive Lisker's sign, and a positive Homan's sign. A patchy distribution—for example adductor and calf tenderness with a positive Homan's sign in one limb and in the other limb calf tenderness with a positive Lisker's sign—would be more suggestive of a thrombophlebitis. Again if a calf muscle was exquisitely tender from thrombophlebitis one would expect some adductor tenderness in the same limb. In making a diagnosis one assesses the presence of the signs, their distribution, and the relation of one to the other, taking into account their degree of positivity.

The patient who has had one or more previous attacks of thrombophlebitis presents often the most difficult diagnostic problem. Many of these have residual tenderness over the course of their veins from their previous illnesses. The present investigation would suggest that in assessing this type of patient groin, femoral, popliteal or foot tenderness would indicate reactivation. Adductor and calf tenderness could be permanent sequelæ of previous damage.

Some of the patients with recurrent symptoms over months or even years gave as good response as the more acute cases. Many of these unfortunate people are mis-diagnosed as arthritis, neuritis or hypochondriacs. Others, correctly diagnosed, are told they have "to live with their symptoms" or have a crepe bandage applied. A trial of treatment as actively applied as in the acute thrombophlebitis is worthwhile and always produces relief if not a complete disappearance of symptoms. It is not the purpose of this paper to discuss fully the treatment of thrombophlebitis such as indications for long-term anticoagulation, femoral vein or inferior vena caval transection, lumbar sympathectic block, and other procedures. A method of treatment and the immediate response of the signs to this treatment has been stated. No claim is made that this is the best method of treatment. Little is known about the immediate and long-term response of thrombophlebitis to different regimes. There is much scope for the selection of types of thrombophlebitis as regards ætiology, location, and extent, and for studies of their response to various treatment regimes.

Summary.

Aching calves, swelling, and muscle cramps in the lower limbs were the presenting symptoms in twenty patients diagnosed as thrombophlebitis. The

commonest signs were selective tenderness over the veins, and tenderness of the subcutanous surfaces of the tibiæ medial to the crest. Homan's sign, induration of the calf muscles, and œdema occurred less frequently. Treatment consisted of bed rest, leg elevation, and intravenous heparin. The response to treatment was recorded by daily physical examinations by one observer. All signs showed a response, but of variable degree. Tenderness persisted in the calf and adductor areas of some patients and may be a permanent sequela. Tibial tenderness subsided more rapidly in the upper third of the bone. Four patients, who had had recurrent symptoms for over six months, gave a full response to treatment and an active approach to this type of thrombophlebitis is advised.

I thank Dr. S. Lisker, Director of the Peripheral Vascular Department of the Graduate Hospital, University of Pennysylvania, for permission to examine patients under his care and for his constant encouragement, teaching, and advice.

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THE USE OF INTERMITTENT POSITIVE PRESSURE VENTILATION IN THE MANAGEMENT OF MAJOR CHEST WALL INJURY

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Introduction.

It is generally accepted that patients with extensive chest wall injury, sufficiently severe to impair ventilatory function should, if possible, be treated in a specialised respiratory failure unit (Windsor and Dwyer, 1961). Such patients usually have associated injuries to the nervous system, the thoracic or abdominal viscera, or to other parts of the bony skeleton. They are often very ill, so that transfer to another hospital may be at best hazardous, and may possibly be out of the question.

The introduction of tracheostomy and intermittent positive pressure respiration (I.P.P.R.) in the management of these cases by Avery, Mörch, and Benson has enabled patients with very severe crush injuries to the chest wall to be salvaged. The more general availability of efficient mechanical lung ventilators has made possible the use of this new method of treatment in the smaller general hospital to which the patient is often first admitted (Clarkson and Robinson, 1962).

This paper presents a case where there was, besides a ruptured spleen and fractured skull, a severe bilateral chest wall injury, causing respiratory failure, successfully treated by I.P.P.R. in a small country hospital with limited anæsthetic cover. Some of the problems arising in the management of this type of case are discussed.

Case Report. A young woman, aged 22 years, was admitted to hospital after involvement in a motor-car accident.

On examination on admission:—

C.N.S. She was unconscious, reacting only to painful stimuli. Pupils were equal and reacted sluggishly to light. Respiration was periodic in character.

The right lower limb was spastic with a dorsi-flexor Babinski reflex while the left lower limb was normal.

C.V.S. Heart rate was regular at 140 per minute and the blood pressure was 140/90.

Chest. There were fractures of left fourth-eighth ribs apparent on clinical examination.

Chest X-ray showed multiple bilateral rib fractures, and a right pneumothorax with some fluid present in the pleural space, but the chest wall was stable and lung ventilation was adequate.

There were two lacerations on the left side of the head with a hæmatoma over the left parietal region.

First Day. The patient's condition had deteriorated on the following day, the pulse had risen and blood pressure fallen. It was evident that there was internal

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bleeding. Blood transfusion was started, and as the second pint was running laparotomy was commenced. Anæsthesia was induced with 20 mg. tubocurarine chloride and 150 mg. thiopentone, followed by oral intubation with a size 9 cuffed endotracheal tube. Maintenance was with closed circuit nitrous oxide, mechanical ventilation being carried out with an Adelaide Mk 1 ventilator (Kenny and Lewis, 1960).

Laparotomy revealed a ruptured spleen which was removed with an appreciable amount (1.5 - 2.0 litres) of blood and clots from the peritoneal cavity. The patient's condition at the end of the operation was satisfactory, blood pressure being 110 mm. Hg. systolic. Atropine 0.6 mg. was given, followed by neostigmine 2.5 mg. and spontaneous respiration started without difficulty.

Second Day. Twelve hours later, by 3 a.m. on the following day, the patient's respiratory function was impaired and the rate had risen to 46 per minute. The patient was cyanosed, and having recurrent attacks of laryngeal spasm as secretions in her pharynx 'spilled over' into the larynx. Under general anæsthesia (oxygen, nitrous oxide, and halothane), using a No. 9 Magill tube, tracheostomy was performed, a Magill size No. 10 cuffed Oxford tracheostomy tube being inserted.

The patient was returned to the ward to be nursed in a steam tent for humidification.

Third Day. For thirty-six hours following tracheostomy the patient's colour remained satisfactory; she was still lightly unconscious and reacted to painful stimuli only. Respiration was fast with a few basal rhonchi; temperature had risen to 100.6° F., a left hemiparesis was present, which was more marked in the leg than in the arm. Following administration of pethidine 25 mg. with chlorpromazine 25 mg., the temperature was reduced to 97° F. by cold sponging. Late that afternoon the patient's anterior chest wall became unstable and 'flail chest' progressively developed with indrawing of the sternum and anterior ends of the ribs on both sides. Cyanosis returned and respiratory frequency increased.

Intermittent positive pressure ventilation was started with humidified air from the Adelaide Mk 1 lung ventilator at a frequency of 36-40 cycles per minute and minute volume of 10.5 litres.

The patient accepted artificial respiration readily, but attempts at spontaneous respiration recurred soon after I.P.P.R. was withdrawn.

Fourth to Sixth Days. This regime was continued for the next seventy-six hours, the patient receiving chlorpromazine 25 mg. and pethidine 25 mg. each evening as sedation. No sedative drugs were given during the day. The trachea was sucked out as often as was necessary. The cuff of the tracheostomy tube was not inflated because

(a) the tube was a large (size 10) one and there appeared to be only a minimal gas leak upwards through the glottis;
(b) there was not sufficient anæsthetic personnel available to supervise hourly deflation/inflation of the cuff;
(c) a previous case treated in this hospital by prolonged I.P.P.R. developed tracheal stenosis several weeks after discharge from hospital. This may have been caused by ischæmia of the tracheal mucosa following over-inflation of the tracheostomy tube cuff.

The establishment of efficient lung ventilation was accompanied by an improvement in C.N.S. signs and an apparent diminution in the depth of coma. Towards the end of this period the patient began to resist ventilation. Her attempts at

respiration were stronger and more effective than before artificial ventilation was started although the chest wall was very unstable.

By 11 a.m. on the sixth day the patient was straining against the ventilator. Her respiratory frequency was approximately 60 cycles per minute with a minute volume of 20.5 litres. The chest was strapped, and after being disconnected from the ventilator she was propped up on pillows, but spontaneous lung ventilation was inadequate and it became necessary to re-start mechanical ventilation four hours later. The patient continued to strain against the ventilator and this was not abolished by the intramuscular injection of pethidine 100 mg. followed by sodium phenobarbitone 200 mg. Because of the importance of abolishing spontaneous respiration, it was necessary to use muscle relaxants and the intravenous injection of 30 mg. tubocurarine permitted easy ventilation of the patient at a rate of 41 cycles per minute with a minute volume of 10 litres. A further 15 mg. tubocurarine chloride given intramuscularly fifty minutes later enabled mechanical ventilation to continue for the next fourteen hours.

At 7.30 p.m. on the seventh day she was again beginning to resist inflation. The patient was disconnected from the ventilator and given pethidine 50 mg. and chlorpromazine 25 mg. intramuscularly. She was now breathing spontaneously at 40 cycles per minute with a minute volume of 12 litres, ninety-six hours after starting I.P.P.R.

The patient's ventilatory function was now adequate for several hours at a time, but while breathing spontaneously the respiratory frequency progressively increased so that after six hours the respiratory rate had risen to over sixty. To prevent physical exhaustion the patient was intermittently connected to the Adelaide pump and ventilated mechanically for several spells. This increase in respiratory rate was accompanied by restlessness which could on this occasion be controlled by pethidine 50 mg. and chlorpromazine 25 mg. intramuscularly.

Eighth Day. On the following morning there was a bout of respiratory obstruction with cyanosis and the blood pressure rose to 170 mm. Hg. A large amount of fibrin and bronchial casts was sucked from the trachea after removing the Oxford tracheostomy tube. The patient was taken to the theatre and bronchoscopy performed. A large amount of purulent fibrin was sucked out of the trachea, but it was evident that most of the foreign material had already been removed by the tracheal suction done in the ward.

Artificial ventilation was again re-established and continued for twenty-four hours following this bout of hypoxia. There was a significant increase in chest compliance following this episode. Without altering the pressure setting on the ventilator the tidal volume increased from 200 to 300 ml. The patient received pethidine 50 mg. and chlorpromazine 25 mg. as often as necessary during this phase. This dosage was effective for four to six hours and produced no deleterious effect on vasomotor tone.

Ninth Day. By mid-day on the ninth day the patient was again straining against the ventilator and these attempts at spontaneous respiration were not controlled by the pethidine/chlorpromazine mixture. Tubocurarine chloride 30 mg. given intravenously and promazine 100 mg. given intramuscularly, followed thirty minutes later by a further 15 mg. of tubocurarine chloride given intramuscularly, enabled I.P.P.R. to be continued easily at forty-eight cycles per minute, delivering a minute volume of approximately 17 litres. After ten hours the ventilation rate was slowed to 40 cycles per minute, delivering a minute volume of 15 litres.

Tenth to Thirteenth Days. During this period the patient's spontaneous respiratory efforts became more effective and it was possible to wean her off I.P.P.R. During the tenth day it was possible to have her breathing spontaneously for up to an hour at a time before she became exhausted. By the thirteenth day she was breathing spontaneously and adequately all the time.

Sedation was maintained with 50 mg. pethidine and 100 mg. promazine given intramuscularly if the patient became restless, or if the patient resisted the ventilator while on I.P.P.R. Phenobarbitone was given at night. Muscle relaxants were not required at this stage. Tracheal suction was carried out as often as necessary. This caused respiratory distress and it was almost always necessary to ventilate the patient mechanically for about five minutes afterwards.

Thirteenth to Sixteenth Days. During this phase mechanical ventilation was not required and spontaneous respiration was adequate. Humidification of inspired air was obtained by nursing the patient in a steam tent. The principal hazard to the patient at this stage arose from the numerous casts desquamated from the bronchial tree, which repeatedly threatened the patency of the airway. Some difficulty was encountered in getting stiff gum elastic catheters round the bend of the tracheostomy tube. Soft rubber catheters could be passed through the tube but were then stopped by mucus and casts in the trachea, and would not penetrate to the major bronchi. On at least one occasion, mucus at the lower end of the tracheostomy tube had a 'valve flap' effect, allowing the suction catheter through but closing and causing airway obstruction as soon as the catheter had been withdrawn. The most effective way of carrying out tracheal suction at this stage was to remove the tracheostomy tube and pass a firm gum elastic catheter directly into the trachea through the tracheostome. A clean tube was re-inserted into the trachea after performing suction.

On the afternoon of the fifteenth day it was evident that the patient's chest wall was sufficiently stable for her to no longer require I.P.P.R. The Oxford tracheostomy tube was then replaced by a curved plastic tube, which presented less resistance to the passage of tracheal suction catheters.

Seventeenth to Thirty-third Days. During this phase bronchial casts ceased to be troublesome, although tracheal suction was still necessary to remove mucus from the bronchial tree. Daytime sedation was no longer necessary, but phenobarbitone was given at night. The patient was allowed out of bed for simple nursing procedures during the whole of this period, and from the twentieth day she was able to walk to the toilet.

An obturator was placed in the tracheostomy tube from the eighteenth day. This was removed only when carrying out tracheal suction which was performed every two or three hours as necessary. Breathing through the upper respiratory tract appeared adequate, and the tracheostomy tube was removed on the twenty-third day after admission to hospital. By the following morning the tracheostome had closed. The strength of the patient's cough was inadequate to remove secretions from her bronchial tree, so the tissue closing the stoma was broken down with a rubber catheter through which between 5-10 ml. of mucus was sucked from the trachea and major bronchi. A metal tracheostomy tube with obturator was re-inserted, and the regime of tracheal suction through the tracheostome was continued for a further ten days.

The tracheostomy tube was removed on the thirty-third day and she was

subsequently discharged home forty-five days after the road accident, having made a good recovery, although it was thought that mentally she was somewhat retarded.

When seen at the follow-up clinic one month after discharge it was thought that intellect had returned to normal and the relatives agreed with this assessment.

Discussion.

Crushing chest wall injury is commonly associated with trauma to the adjacent thoracic and abdominal viscera, the nervous system, and other parts of the bony skeleton. Even when the associated injuries are not mortal, many such patients will die because of the impairment of respiration resulting from the trauma to the thoracic wall.

The presence of multiple rib fractures causing instability of the thoracic cage is associated with underventilation of adjacent lung tissue. During inspiration the mobile segment of chest wall moves inward driving air out of adjacent lung tissue into the bronchial tree, which thus becomes filled with alveolar air and not air from the atmosphere. During expiration this movement is reversed. This to-and-fro movement of air within the lungs of a patient with a 'flail' chest wall results in the presence of an asphyxial gas mixture in the alveoli. It is comparable to that which may occur during thoracotomy if spontaneous respiratory effort persists, and which Nosworthy terms 'paradoxical respiration' (Nosworthy, 1941). The similarity between the problems of the crushed chest and the patient undergoing chest surgery have been pointed out by Chamberlain and Daniels (1951). In each the difficulties of maintenance of pulmonary ventilation and of removal of secretions from the tracheo-bronchial tree are similar. If the chest wall is stabilised so as to prevent the development of paradoxical respiration, respiratory failure may be avoided. This stabilisation of the chest wall can be achieved by inserting steel pins under the pectoral muscles but superficial to the ribs (Hudson, McElvenny, and Head, 1954) or by splinting the sternum (Jensen, 1952; Jaslow, 1946; Jones and Richardson, 1926; Heroy and Eggleston, 1951; McKim, 1943). Traction is then exerted on the chest wall by means of overhead weights.

Other authors have employed tracheostomy, which, by reducing dead space and by reducing the resistance to airflow into and out of the lungs, makes ventilation more efficient and diminishes paradoxical movement of the chest wall (Carter and Giuseffi, 1951; Brewer et al., 1946). It is probable that tracheostomy by itself will not save the life of the more severely injured patient. In a series of six cases reported by Brewer et al., the four survivors were able to have the tube out on the eleventh, fourteenth, fourteenth and sixteenth days. The case reported here would not have survived without I.P.P.R. and it was not possible to remove the tracheostomy tube until the thirty-third day.

A third approach to the problem has been the use of continuous positive pressure respiration (Jensen, 1952). By supplying a flow of oxygen at 4 cm. water pressure into the trachea the lungs are distended. The patient exhales against this pressure so that expiration and not inspiration becomes the active phase of the respiratory cycle. This manœuvre is similar to the continuous positive pressure

respiration used in anæsthesia for chest surgery more than half a century ago (Tuffier, 1906).

In 1945 Hagen reported a case of multiple rib fractures which was treated with a tank respirator. Ten years later, in 1955, Avery, Mörch, Head, and Benson reported another case of a man aged 51 who sustained multiple rib and other injuries. Attempted stabilization of the chest wall, using the Hudson traction method, was unsuccessful, but he was successfully treated by hyperventilation with a Mörch respirator. Since than an increasing literature on the treatment of chest injury by mechanical hyperventilation has accumulated (Avery, Mörch, and Benson, 1956; Windsor and Dwyer, 1961; Clarkson and Robinson, 1962).

Looking at this case in retrospect, it seems that the progress of this patient fell into five different phases:—

PHASE 1. From the establishment of I.P.P.R. through the tracheostome until the patient began to resist mechanical ventilation; this lasted approximately seventy-two hours (from the afternoon of the third until the evening of the sixth day in hospital) and did not present any special problems. No sedative drugs or muscle relaxants were required. The trachea was aspirated hourly or more often if indicated. Ventilation was at a fast rate (35-40 cycles per minute) because the lung ventilator in use (an Adelaide Mk 1) would sometimes stall if running too slowly. One of the features of this stage was the rapid lightening in the depth of coma when efficient respiration was established.

PHASE 2. The patient's attempts at spontaneous respiration led to straining against the lung ventilator and while this could usually be prevented by mixtures of pethidine with either chlorpromazine or promazine, muscle relaxants were occasionally required. One might expect that a patient-triggered ventilator would be useful at this stage, but those who have used this have found that either underventilation results (Avery, Mörch, Head, and Benson, 1955), or that there is an increased paradoxicity of the flail segment in the chest wall (Clarkson and Robinson, 1962).

PHASE 3. This was characterised by the formation of bronchial casts which frequently caused partial blockage of the patient's airway. This phase overlapped phase 2 but outlasted it. In our case this phase started on the eighth day and ended quite abruptly on the sixteenth. Thereafter, although the patient required tracheal suction to remove mucus, no bronchial casts were desquamated. During this phase the first sign of airway obstruction was persistent restlessness, refractory to any sedation. This restlessness persisted, sometimes for three or four hours until the bronchial casts were removed by cough or suction.

PHASE 4. During this period the patient was able to breathe adequately, but it was necessary to keep the tracheostome patent in order to carry out tracheal suction. Spontaneous respiration was adequate, but the cough mechanism was too weak to clear mucus from the lower respiratory tract.

PHASE 5. This was the period after the removal of the tracheostomy tube. By now the patient had recovered virtually full respiratory function. The cough reflex was now adequate.

Summary.

A young woman, aged 22 years, was admitted to hospital unconscious, with head injury, fracture of the skull, ruptured spleen, and multiple rib fractures. After splenectomy she went into a state of respiratory insufficiency because of the instability of her thoracic cage.

She was treated by tracheostomy and mechanical lung ventilation, continuously at first and then intermittently for eleven days in all. The phase of mechanical ventilation was followed by a period when she could ventilate herself, but only through a tracheostomy. This period lasted a further three weeks. She was discharged home after six and a half weeks in hospital with no residual sequelæ.

Acknowledgments.

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A STUDY OF OBESITY IN GENERAL PRACTICE

By KENNETH BEW, M.B., B.Ch., B.A.O.

MUCH has been written on the subject of obesity, so much that it is impossible to review the literature here. Yet, after all the investigations on the subject, the cause of overweight still evades us, except in a few conditions (e.g., myxœdema), where it occurs as a secondary manifestation of underlying disorder. Basically, of course, if energy input is greater than output, there is increase in weight, but this brings us no nearer the solution to the problem. Why can some eat to their hearts' content and yet retain a slim silhouette, whilst others, who do equally as much exercise, become obese on the same diet? Have the slim some inborn metabolic defect which leads to extravagance in their use of food, or are they incapable of laying down a store? Conversely, have the obese, by some peculiar process of metabolism, the power to extract from their food more value than the "normal" person?

What is the ideal weight? There are two distinct factors which decide this—the æsthetic and the medical. The first, and probably the dominant factor, varies from time to time and from place to place. Beauties of yesterday would not be considered as serious contestants in a present-day contest—nor would the possessor of that Central African hallmark of femininity, steatopygia. From the medical standpoint, the height and weight tables have developed only over the past century, and have been drawn up by the assurance companies, as the result of their experience of the effect of weight on the expectation of life. These tables, it should be realised, are based on commercial considerations, not medical ones, but they do show that the elimination of obesity is desirable. Considered as a disease, obesity has its complications—dyspnœa, "chestiness," strain on the cardio-vascular system (especially in the elderly), leading in extreme cases to frank failure, mild diabetes of maturity-onset type. In the young, displaced epiphyses are commoner in the obese. The psychological effects, too, can be severe, no less on adults than on the young, who suffer the taunts of their school-fellows. Therefore, it would seem to me that obesity is a problem worthy of a serious approach by the general practitioner.

In spite of the absence of a strict definition of obesity, the overweight patient is not difficult to detect, and the question which arises is what shall be done about it? Put simply, the answer should be "Eat less and do more," but in my experience, so many people who carry excess weight have normal behaviour patterns in respect of exercise that I have come to believe that the amount of exertion undertaken by the patient is of only secondary importance, and it would be pointless to recommend extra exercise as a method of losing weight. Indeed, it would appear that this course would defeat its object, because appetite is likely to increase as a physiological response to the increased demand for energy. In any case, the grossly obese have reached the stage where the effort involved in taking exercise is so great that they are incapable of it. The more satisfactory method of attacking this problem is reduction of food intake. Since the quantity

of food eaten is largely a matter of habit, and since habits are notoriously difficult to break, the advisability of using appetite suppressant drugs immediately comes up for consideration. Much has been written on their side effects, and especially on the catastrophe of addiction, particularly with regard to d-amphetamine. Indeed, doubt has been expressed as to whether they have any effect at all on appetite.

A clinical trial was undertaken with the object of solving this problem. The specific questions which it was designed to answer were:—

1. Are the marketed appetite suppressants really effective?
2. How long do they act?
3. Which is best?
4. What is the incidence and nature of side effects?

Method.

About two-thirds of the patients who were admitted to the trial were overweight and themselves desired to lose weight, usually on æsthetic grounds or economic grounds (e.g., their clothes no longer fitted), and about one-third were overweight and required to reduce on medical grounds (e.g., increasing dyspnœa, hypertension). Care was taken that no person who showed any psychiatric instability was admitted on the grounds that they may become habituated or addicted to the agents used. The materials used were dexamphetamine sulphate, a placebo, benzphetamine (Didrex) phenmetrazine (Preludin), and diethylpropion (Tenuate). These were all supplied identical in appearance and labelled respectively 4-M, 5-M, 6-M, 7-M, and 18-K.

Each bottle contained fifty tablets, enough to last sixteen days. Since one of the signs of habituation or addiction is increased tolerance of the particular material, and consequent increase of dosage, any patient who returned before the expiration of two weeks saying that his tablet supply was exhausted would be immediately suspect. There was also a supply of the placebo tablets which were known to me as such and which were used either on patients when they had lost the requisite amount of weight, or to be given should any patient show signs of habituation or addiction, to see whether this subterfuge would relieve the situation. After an initial weighing and examination successive patients received the tablets in a predetermined order and were instructed to take them at a dose of 1 tablet three times daily, taken one hour before mealtime, but not later than 4.30 p.m.

They were reweighed at two-week intervals and enquiry made as to side effects and particularly to detect any suspicion of habituation. When the patient ceased to lose weight or, as in many cases, gained weight, he was transferred to the next agent in the same order as before. Initially no instruction was given as to diet, but it very soon became apparent that this was necessary and, subsequently, all patients were given a standard weight-restricting diet. There was a short period towards the end of the trial when benzphetamine or known placebo was given to all patients still taking part in the study. The measurements taken under these circumstances were included in the results. The trial was, therefore, con-

ducted under double-blind conditions with the exception of this short terminal period. That is at this later stage a known active drug was issued to those patients whose weight loss was inadequate or a placebo if the weight loss was satisfactory.

Results.

Of those patients under treatment for more than six weeks, seven entered the trial on dexamphetamine, five on phenmetrazine, six on benzphetamine, and eight entered on diethylpropion, and eight on placebo. Thirty-four patients took these various agents for a total of 271 weeks before they ceased to lose weight, a mean of 7.97 weeks each. The total weight loss was 265 lb., a mean of 7.79 lb. per patient at a mean of 0.95 lb. per week each. When these results are broken down into two groups, the active agents on the one hand and placebo on the other, there is a very obvious difference: the placebo effect lasts 4.13 weeks against 9.15 weeks for the active agents; the patients taking active tablets lost an overall total of 10.19 lb. (1.11 lb. each per week), whereas among those taking placebo tablets the weight loss was exactly countered by the weight gain. With the numbers at my disposal one cannot compare the various agents with statistical validity, but some idea of their effectiveness can be gained from Table 1.

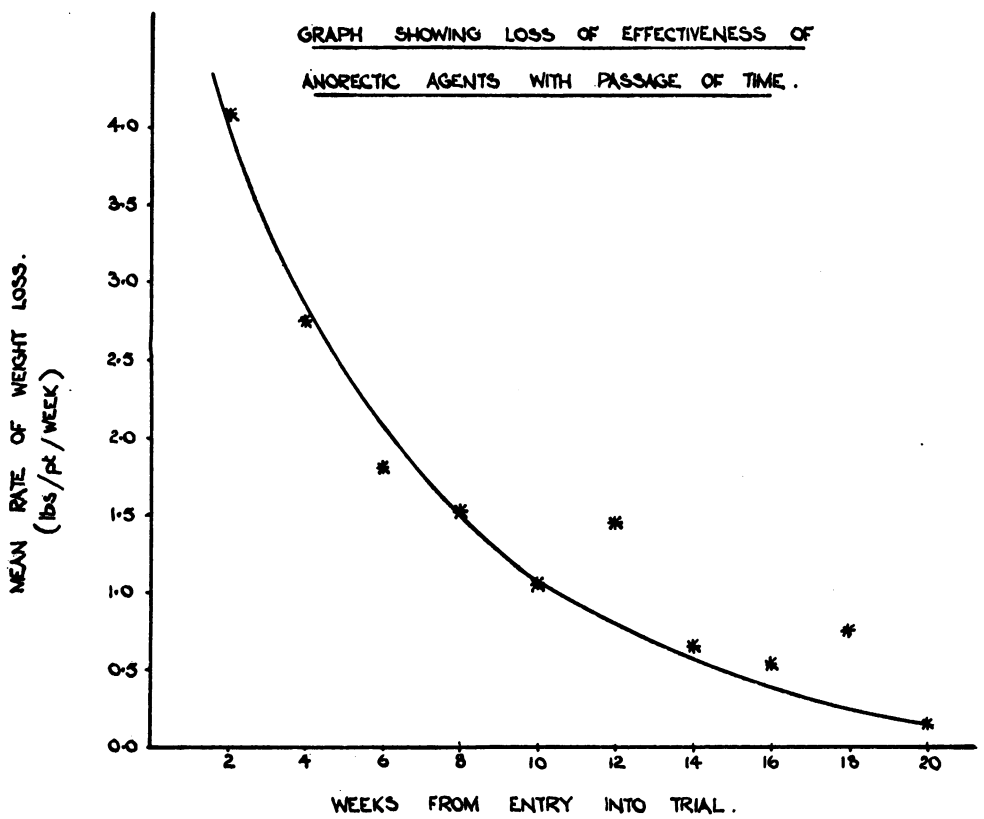

TABLE 1.

	Number of Patients	Duration of Treatment (weeks)	Total Weight Loss (lbs.)	Average Duration Treatment (weeks)	Mean Rate of Weight Loss (lbs./weeks)	Mean Wt. Loss per Pat. (lbs.)
	A	B	C	B/A	C/B	C/A
4 M d-amphetamine:						
Primary course	7	73	74	10.43	1.01	10.57
Subsequent course	9	47	11	5.22	0.23	1.22
5 M placebo:						
Primary course	8	33	0	4.13	0	0
Subsequent course	9	44	−2 (gain)	4.89	−0.05 (gain)	−0.22 (gain)
Known placebo as:						
Course	—	—	—	—	—	—
Subsequent course	10	52	3	5.20	0.06	0.30
Combined known and unknown placebo:						
Primary course	8	33	0	4.13	0	0
Subsequent course	19	96	1	5.05	0.01	0.05
6 M benzphetamine:						
Primary course	6	43	63	7.17	1.47	10.50
Subsequent course	13	59	50	4.54	0.85	3.85
Prescribed benzphetamine as:						
Course	—	—	—	—	—	—
Subsequent course	10	34	16	3.40	0.47	1.60
Combined known+ unknown benzphetamine:						
Primary course	6	43	63	7.17	1.47	10.50
Subsequent course	23	93	66	4.04	0.71	2.87
7 M phenmetrazine:						
Primary course	5	53	60	10.6	1.13	12.0
Subsequent course	8	48	48	6.00	1.00	6.00
18 K diethylpropion:						
Primary course	8	69	68	8.63	0.99	8.50
Subsequent course	12	39	11	3.25	0.28	1.09
Total including placebo:						
Primary course	34	271	265	7.97	0.95	7.79
Subsequent course	71	323	137	4.57	0.42	1.93
Total excluding placebo:						
Primary course	26	238	265	9.15	1.11	10.19
Subsequent course	52	227	136	4.38	0.59	2.62

After weight loss had ceased, the patients were transferred to the next drug (this procedure was repeated with some patients several times) and the same difference was observable between the placebo tablets and the active. It is worthy of note that the known placebo tablets produced quantitatively similar results to the blind-label placebo tablets and the same occurred with the benzphetamine either issued under blind-label or precribed on E.C. 10. The graph shows the rate of weight loss against the time from entry into the trial and demonstrates a progressive loss of effect as time goes by. Whether this is due to a loss of true pharmacological effectiveness or to progressive failure of determination on the part of the patient it is not possible to state.

TABLE 2.

Side Effect	D-amphetamine Sulphate	Benzphetamine	Diethylpropion	Phenmetrazine	Placebo	Total without Placebo	Total with Placebo
Depression	- 1	–	1	1	–	3	3
Tension	- –	2	–	–	2	2	4
Insomnia	- –	1	–	–	–	1	1
Drowsiness	- 1	–	–	–	–	1	1
Sweating	- –	–	1	1	–	2	2
Increase of appetite	- –	1	–	1	1	2	3
Total	- 2	4	2	3	3	11	14
Number of patients taking drug	- 16	29	20	13	27	78	105
Proportion with side effects	- 1 : 8.0	1 : 7.25	1 : 10.0	1 : 4.33	1 : 9.00	1 : 7.09	1 : 7.50

Side effects were reported on fourteen occasions and are listed in Table 2. Certainly the frequency and severity of these were the same whether patients were currently taking the placebo or the active tablets. It is doubtful whether the nature is very different. All were highly subjective (including two who complained of excessive sweating) and none were serious. Whilst insomnia and tension could be anticipated when using this type of material, drowsiness and depression were most unexpected, particularly in the case of dexamphetamine, a drug widely used to combat these very states. Most of the side effects occurred at times when patients were losing weight most rapidly, and it is not improbable that they were due to hunger, or were, indeed "withdrawal" phenomena vis-a-vis food. There was only one patient in whom there developed signs suggesting early habituation. He was at the time taking dexamphetamine sulphate and known placebo tablets were substituted. The incident passed off without trouble. I feel that this particular difficulty is well within the competence of the average general practitioner who, knowing his patients as he does, is capable of detecting with fair accuracy the patient who may become habituated or addicted and with-

holding from him this class of medication. Further, he should (and can) distinguish between those patients desiring these substances for genuine help in reducing weight and those who want them "for kicks."

Conclusion.

To lose weight demands considerable effort on the part of the patient, an effort which must be sustained. A number of patients who entered the trial were unable to maintain this effort for more than six weeks. Certainly, patients require assistance in achieving reduction of weight and this trial shows that there is real benefit to be gained from the various anorectic agents and that this is greater than can be obtained using a placebo. This effect diminishes with time and is virtually nil after some two to three months. During this period the patient can expect to lose 10 lb. It appears that there is little or nothing to be gained by transfer to another agent when weight loss has ceased since only another 2½ lb. are likely to be lost over the next month, but there is great individual variation in these figures.

Side effects occurred with a frequency which was not vastly different in the case of active agent or placebo tablets, and they appear to be more related to the current rate of weight loss than to the drug concerned.

Summary.

A trial is described, using various anorectic agents and placebo tablets on a double-blind basis. It was shown that the active agents were more effective in all respects than placebo tablets. Side effects were not of moment and were not significantly more frequent in any one group. Their possible cause is discussed. No conclusion was possible as to the superiority of any of the active materials used.

I would like to acknowledge the great assistance which was provided by the Medical Department of Upjohn Ltd. (who kindly supplied the tablets) during the statistical analysis stage of this study, and my thanks are due to my partners, Dr. Mary Bew and Dr. John Dunlop, for their constructive criticism and help during the trial.

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OTOSCLEROSIS AND ITS TREATMENT

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Otosclerosis is a disease process which arises in the otic capsule in which the normal bone is replaced by new spongy bone. This process begins most commonly just anterior to the oval window fossa in which the stapes sits. Involvement of the stapes in the disease process reduces its mobility, thus resulting in a conductive deafness.

Until the fenestration operation was introduced no surgical treatment could be offered to patients with this disease. The fenestration operation gave some hearing improvement, but it had the disadvantage of leaving a large mastoid cavity, which frequently became infected, and of not restoring the hearing to normality. It was succeeded by the operation of stapedectomy which left no mastoid cavity and did, in many cases, restore the hearing to normal. Several variations in the technique of this operation have been described, all of which result in good hearing improvement. With these advances in surgical technique it is now possible to release many patients with otosclerosis from their handicap of deafness and restore them to useful life in their community.

Natural History.

Clinical otosclerosis has a hereditary tendency, as first pointed out by Toynbee (1860). It affects females four times as often as males and usually affects both ears. Rarely it forms part of a rare hereditary defect of bone structure called Van der Hoeve's syndrome where it is associated with excessive blueness of the sclera and osteogenesis imperfecta. Apart from this, otosclerosis has no known relationship with any systemic disease.

It is now established that pregnancy influences the course of otosclerosis. A woman with otosclerosis has a one chance in four of having further hearing loss as a result of a pregnancy, especially the first one. The age of onset of deafness is usually between 16 and 25 years of age but the disease process must have started some time before deafness occurs. The deafness is slowly progressive and is often associated with tinnitus, while in later life a nerve deafness is superimposed on the conductive element in many patients. The exact ætiology of this nerve deafness is unknown, but it is thought to be due to otosclerosis.

Pathology.

Otosclerosis is a disease of the endochondral layer of the otic capsule in which the normal bone is replaced by new vascular bone. It arises most commonly in the fissula ante fenestram (Guild, 1944), which lies just anterior to the oval window and commonly affects both ears. As the disease progresses and more

vascular bone is laid down, the footplate of the stapes becomes involved and its mobility is restricted. Thus sound waves striking the tympanic membrane produce less movement of the ossicular chain and the magnitude of the stimulus reaching the cochlea is greatly reduced. The otosclerotic process may, by direct extension, invade the cochlea and produce a nerve deafness. Similarly, it may affect the vestibular system, causing vertigo.

Signs and Symptoms.

The following symptoms are usually present in otosclerosis:—

Slowly progressive hearing loss. This affects the lower tones first and is usually present in both ears. The acuity of hearing is slowly but progressively impaired, as the stapes becomes more involved in the disease process.

Paracusis. The patient will say she hears best when in noisy surroundings. This is the opposite to what is found in patients with a nerve deafness. Paracusis occurs because the patient with otosclerosis has a low tone conductive hearing loss and so cannot hear surrounding noise. Persons with normal hearing in this situation raise their voice in pitch and intensity to overcome surrounding noise and the patient with otosclerosis hears the raised voice more clearly.

Tinnitus. This is a common complaint in deafness due to otosclerosis. It is not present in every case and is relieved by surgical correction of the deafness in 50 per cent. of cases (Schuknecht, 1964).

Clinical examination reveals normal tympanic membranes. Occasionally, when the disease is very acute, a red flare can be seen through the tympanic membrane. Tuning fork tests reveal that the patient hears better by bone conduction than by air conduction in the affected ear. This finding should be confirmed by a full audiometric examination in every case before surgery is contemplated.

Treatment.

The current ideas regarding treatment are that hearing can be restored to normal or improved by performing any one of the following procedures. The exact operation performed will depend on the extent of the otosclerotic process found at surgery and also on the experience and personal preference of the surgeon.

Each of these operations is done through a speculum placed in the external canal of the ear. By means of an operating microscope, the tympanic membrane can be viewed at a magnification suitable to the surgeon. Local or general anæsthesia may be used. A semi-circular incision is made in the skin of the ear canal five or six millimetres from the tympanic membrane, beginning superiorly and extending in a roughly arcuate fashion to reach the inferior aspect of the canal. The skin of the canal and the tympanic membrane are reflected forwards to expose the middle ear cavity. Bone usually needs to be removed from the postero-superior meatal margin to give adequate exposure of the whole footplate of the stapes. The exact surgical procedure now followed will be one of the following.

Stapedectomy.

In this operation the stapes bone is removed completely and replaced by a graft-prosthesis. Those in common use are now described.

1. *Fat and Wire Prosthesis.* This technique was first described by Schuknecht (1960) and is the one most commonly used today. The fat is taken from the lobe of the ear and the prosthesis is formed, using thirty-six English gauge

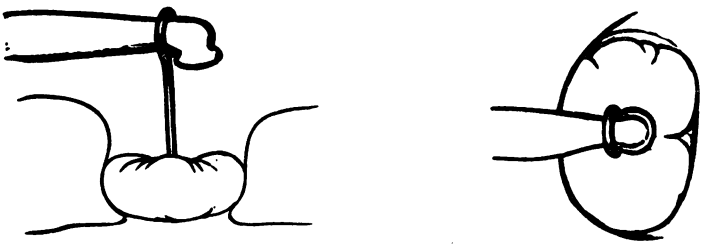
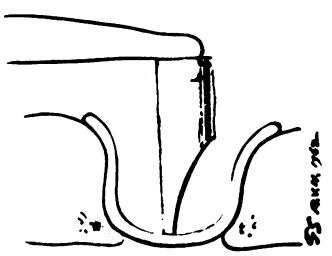


Fig. 1—Typical fat—wire prosthesis. The fat is placed in the oval window fossa and the wire is attached to the lenticular process of the incus.

stainless steel wire. The fat is placed in the oval window and the other end of the wire is attached to the lenticular process of the incus, as shown in Fig. 1.

2. *Polyethylene tubing and vein graft.* This procedure, first described by Shea (1958), consists of covering the oval window with a vein taken from the arm or leg and bridging the gap between the graft and the incus with a polyethylene strut (Fig. 2). This is a satisfactory technique, but its major drawback



reconstruction.

Fig. 2—Vein graft and polyethylene tubing

is that the strut may become detached from the incus and thus no hearing gain result.

3. *Gelfoam and a Wire Strut.* This operation was described by House in 1962 and is a combination of the two techniques already described. A portion of

compressed gelfoam is placed over the oval window and a wire loop, as shown in Fig. 3, is placed on the gelfoam and crimped to the incus. The wire loop is less likely to slip from its position than the polyethylene, and for this reason many surgeons prefer this operation.

Many minor variations in the techniques described have been introduced. One of the best known is that devised by Kos (1960) in which a rolled up vein is

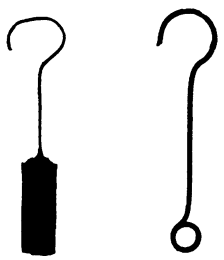
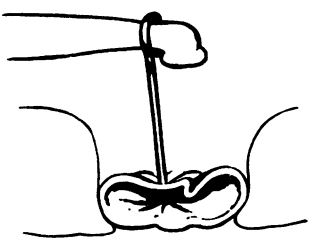


Fig. 3—Shows a teflon-wire piston on the left and beside it a wire strut. Each is 5 mm. in total length.

substituted for fat, as shown in Fig. 4. Otherwise the operation is similar to that described by Schuknecht. All of the operations described give excellent hearing results in skilled hands. However, there remains a group of patients where the footplate of the stapes is so involved by otosclerosis that removal would only result in a severe nerve deafness due to damage to the inner ear. Such patients are best treated by the operation of partial stapedectomy.



VEIN PLUG AND WIRE STRUT (KOS)

Fig. 4—Vein plug and wire prosthesis.

PARTIAL STAPEDECTOMY (Piston Operation).

This operation has only been in general use for about two years. It consists of removing the crura of the stapes and drilling a hole in the footplate big enough to accommodate a piston not larger than 0.8 mm. in diameter. The piston is inserted so that it projects about half of one millimetre below the footplate while the other end is attached to the incus. Several types of piston may be used, but

a satisfactory one is that shown in Fig. 3. While some surgeons use this operation on all cases of otosclerosis, many authorities think its use should be limited to those patients in whom the footplate of the stapes is found to be very thick.

The surgical treatment of otosclerosis has resulted in the restoration of hearing to patients previously destined to live in a world of silence or the lifelong use of a hearing aid. While further advances in technique are expected those in use at present give excellent results.

I am indebted to Dr. H. Schuknecht, Professor of Otolaryngology, Harvard University, for many helpful suggestions during the preparation of this paper.

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ORAL PIGMENTATION AND INTESTINAL POLYPOSIS
(PEUTZ-JEGHERS SYNDROME)

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Introduction

In 1921 Peutz described a family with intestinal polyposis and spots of melanin pigmentation in and around the mouth. Prior to this, in 1896, Sir Jonathan Hutchinson described two girls with pigmented patches in the oral mucosa and around the mouth. Later, Parkes Weber (1919) reported that one of these twins died of what appeared to be an intussusception. Since 1921 over one hundred cases have been described. The syndrome was first recognised in the British Isles by Tanner in 1951. In 1959 Falkinburgh and Kay reviewed the literature up to that date. The Peutz-Jeghers syndrome is a rare but well-defined syndrome. In view of the serious consequences, despite the ease of diagnosis, a further case is worth reporting.

Case History.

A girl, aged 6 years, was seen in February, 1957, at a chest clinic in St. Columb's Hospital with a mild respiratory infection. Prior to this she had been seen at another hospital where anæmia had been diagnosed and treated with an iron preparation. At the first visit the curious pigmentation of the red parts of her lips and dark brown spots on nose and upper lip were noted. No buccal pigmentation was present. This had been observed by her parents shortly after birth. There also appeared to be a tendency for the melanotic spots on her lips to peel.

In October, 1957, a severe attack of vomiting occurred, but by the time she was seen in the Out-patient Department there were no abnormal signs in her abdomen and vomiting had subsided. Despite iron therapy hæmoglobin continued to remain low at 10.4 g/100 ml. (70 per cent. Haldane). At that time she was seen by a dermatologist who considered the pigmented areas were melanotic and very likely to be congenital in origin.

She continued to attend the chest clinic from time to time with mild respiratory symptoms. The hæmoglobin remained mostly around 10–10.5 g/100 ml. (highest level being 11.6 g/100 ml.). In January, 1958, she had a period of treatment in another hospital under a pædiatrician for her chest symptoms and anæmia. The condition of her lips was noted, but during her four weeks in hospital there was no complaint of abdominal pain. In June, 1958, she was re-admitted to the same hospital with a fractured skull. The condition of her lips was again noted and during her fortnight in hospital there was no complaint of abdominal pain. Following discharge there was the occasional complaint of headache and dizziness for the next year.

In November, 1958, a further mild attack of vomiting occurred, not associated

with abdominal pain. Her next significant complaint was in the spring of 1960 when she had a mild attack of abdominal discomfort.

She was next seen n Altnagelvin Hospital in October, 1960, when she was admitted with a three-day history of crampy abdominal pains. Prior to this she had had mild recurrent pain of a crampy nature over a period of two months. On this occasion pain in the upper abdomen persisted and became more severe and was associated with marked vomiting. She was found to be extremely shocked and restless. As a result of the pallor the pigmented areas on her nose and upper lips stood out. (Indeed on subsequent questioning her parents remarked that in the previous year the pigmented areas had become more marked.) Blood pressure was 90/60 and hæmoglobin 10.9 g/100 ml. (74 per cent. Haldane). There was generalised rigidity and tenderness of her abdomen. Two possible conditions presented themselves—(a) generalised peritonitis following acute appendicitis; (b) intussusception (as part of Peutz's syndrome). At laparotomy a gangrenous jejuno-jejunal intussusception was found. After this was resected a further loose small jejuno-jejunal intussusception was located. After its reduction two small polyps were removed from its apex. Unfortunately death occurred seven hours later. Post-mortem was refused.

The following is a description of the material submitted to Dr. J. E. Morison for histo-pathological examination: "The large tumour provides a very fine section showing the base of attachment and the polypoid mass. It is a well-differentiated papillary adenoma. The tumour shows gland-like spaces, some of which are slightly dilated. These are lined by high columnar cells which are well differentiated and secreting some mucin. There is no ulceration of the surface.

The small polyp is less satisfactory and shows only mucosa proper to the bowel and some rather œdematous submucosal tussue. I am somewhat doubtful about calling this anything more than a simple polyp, and probably secondary to œdema or hæmorrhage in the underlying submucosa."

Discussion.

The Peutz-Jeghers syndrome is by definition a combination of oral melanosis combined with small intestinal polyposis in which frequently a definite hereditary factor can be demonstrated. The siblings (four boys and two girls) and parents of this patient were examined radiologically but no evidence of polyposis was found. In 1962 Sheward describes an 8-year-old boy in whom, by using the double-contrast technique, unusual radiological features were demonstrated. The intussusception began in the prepyloric region of the stomach and extended to the upper jejunum. Tanner (1959) states, however, that X-ray studies of the small bowel rarely demonstrate the polyps. A hereditary factor is believed to be present in half the cases.

In most patients symptoms first present in the second decade, but the range of age of onset is wide, from 4 years to over 70 years. The sexes are equally affected.

The pigmentation is the most obvious and striking manifestation of the syndrome. Such a finding indicates a thorough clinical and radiological investigation. The delay in diagnosis in this case was due to the fact that the various clinicians (including myself) did not know of the existence of the syndrome, but, despite its rarity, it should be more widely known, particularly as the

consequence may be disastrous. Attention was drawn to the syndrome in an editorial in the British Medical Journal five months previously (May 28) and the diagnosis made when the child was next seen was unfortunately too late.

The melanotic spots occur most frequently on the labial and oral mucosa as small round blotches of brownish black pigment (1–2 mm. in diameter) and are easily differentiated from freckles. If relatives are being interrogated it should be remembered that such spots may have escaped comment and hence a negative family history may be given. However, all members of this patient's family were examined with negative results. Melanotic spots are occasionally present on the gums or hard palate but rarely on the tongue. They may also be found about the eyes, on the cutaneous surface of the upper lip (as in this case) over the nose or on the fingers, hands, toes, and feet. The most common site is believed to be the mucosal surface of the lower lip. I could find no reference to peeling of these lesions as apparently tended to occur in this case. With age they may fade or even disappear except perhaps those in the mouth.

This patient really presented with an iron deficiency anæmia which, on treatment, had only a temporary response. This was presumably due to intestinal bleeding from the polyps. Massive bleeding is rare.

The intestinal polyposis should be considered the second essential part of this syndrome. Polyps are most numerous in the small intestine, but may be present in the stomach, colon or rectum. The polyps present the usual histology of polypoid adenoma of the gastro-intestinal tract. It is believed that malignancy is unlikely to occur in this syndrome in contrast to other syndromes of "familial intestinal polyposis" in which the polyps develop in the colon and rectum.

Patients with this syndrome may therefore be discovered on routine examination or during the examination of relatives following the discovery of a case. Other patients may present with symptoms of anæmia, recurrent abdominal pain, recurrent single or multiple intussusceptions, melænia, or colic on rising and after meals with noisy borborygmi. In the two cases (mother and daughter) reported by Keen and Murray (1962) borborygmi was marked and considered hysterical in nature.

Diagnosis depends upon awareness of the significance of the pigmentation and its relationship to the Peutz-Jeghers syndrome.

Now that it is recognised that malignancy is unlikely there is no indication for removal of large parts of the small intestine and the resultant serious metabolic disturbances. Reduction of intussusception (single or multiple) will require surgical intervention though many minor intussusceptions must reduce themselves with or without abdominal massage. The latter procedure is unreliable and is probably best not carried out. A further complication to preventive surgery is that polyps have been known to develop in areas not previously involved. Treatment is not required for the melanotic areas, as they do not present cosmetic problems. Regular hæmatological supervision is advisable.

The parents of any child should be thoroughly acquainted with the condition so that no undue delay occurs in seeking medical advice when an intussusception

develops, and so that unnecessary exposure to X-rays may be avoided as the complaint of recurrent abdominal pain may lead to further radiological investigations.

Summary.

A fatal case of the Peutz-Jeghers syndrome: The child had been under regular supervision for some years with mild recurrent respiratory infections and persistent anæmia. From time to time crampy abdominal pains were described. The pigmented areas had been noticed when first seen. Later, their significance, as part of the Peutz-Jeghers syndrome was realised. The child died with a gangrenous intussusception. Other aspects of the syndrome, including the place of surgery, are discussed.

I am indebted to other members of the staff of the Londonderry Hospital Group: to Mr. J. G. Pyper for operating on this child; to Dr. W. H. McDaniel and Dr. R. J. Young for access to their records, and to Dr. D. G. C. Whyte for carrying out the radiological investigations of the other members of the family. I also wish to express my thanks to Dr. J. E. Morison of the Histo-Pathology Laboratory of the Belfast City Hospital for supplying the histology report.

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THE PHYSIOLOGY OF THE ABDOMINAL VAGI AND THE EFFECTS OF VAGOTOMY

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As vagotomy and drainage procedures become more commonly employed in the treatment of duodenal ulceration it is important to consider the role played by the vagus in controlling the function of various abdominal organs, since many will suffer a change after the vagi have been divided. The various organs will be considered separately.

Stomach.

(a) *Gastric Motility.*

The vagi exert a continuous influence on gastric tone, but their action on the pylorus does not seem wholly understood and may in fact be unimportant.

The earliest complication of vagotomy was seen to be loss of motility and dilatation of the stomach. This later led to the use of drainage procedures as an accompaniment to vagotomy. It is the loss of contractability which is the basis for Burge's test for the completeness of the vagotomy (Burge and Vane, 1958).

(b) *Gastric Secretion.*

The vagus plays an important part in the control of gastric secretion acting directly on the parietal and chief cells. This was well shown in Pavlov's sham-feeding experiments in 1889 when food given by mouth escaped via an œsophagostomy in the neck and yet acid was secreted from a vagally innervated parietal cell pouch. Interruption of the vagi at any level stops this response. This cephalic phase of acid secretion is immediate, but it is not sustained. The vagi also act indirectly on gastric secretion by causing the release of gastrin which in turn stimulates acid secretion. This, of course, is not the only stimulus for the release of gastrin. Stimuli from afferent endings in the stomach have been recorded in the vagi by Iggo (1957). The endings are sensitive to tension and pH changes.

Vagotomy reduces acid secretion by 65 per cent. in the vast majority of patients (Kay, 1962) and, of course, the cephalic phase of acid secretion is totally abolished. However the secretory response to all stimuli (histamine, gastrin, and cholinergic drugs) is also reduced (Oberhelman and Dragstedt, 1948; Hood and Code, 1951). Anita and his colleagues (1951) have suggested that the basal rate of acetylcholine synthesis in the gastric mucosa determines the sensitivity of the parietal cells to drugs.

Intestines.

Staveny et al (1963) have shown that the hepatic branch of the anterior vagus innervates the proximal duodenum and that the cœliac branch of the posterior vagus supplies the mid gut, i.e., from the duodenum to the splenic flexure and

stimulation of the vagi causes contraction of the duodenum, small intestine, and proximal colon. The cephalic phase of secretion of succus entericus and secretion by Brunner's glands is also initiated by the vagi (Wright, 1940).

Guyton (1961) states that vagotomy decreases intestinal peristalsis, but after a period of months this is compensated by increased excitability of the intrinsic nervous system. Kay (1962) reports that the average period of intestinal paralysis after vagotomy is fourteen hours and that small bowel mobility is almost entirely dependant on intrinsic nerve mechanisms and virtually independant of extrinsic nerve influence. However, Ballinger (1963) states that for the first few weeks following vagotomy in the upper part of the abdomen there is a marked disorder of motility of the small intestine with unequal distribution of the barium column. In dogs with denervated small intestines there is a loss of villi and a characteristic X-ray pattern similar in some respects to that of human sprue. The villi begin to regenerate after a month but are deformed and club-like. After five to eight months fat absorption and X-ray appearances return to normal (Ballinger, 1963). Despite conflicting reports about the intestinal transit time there is no doubt that intestinal atony and dilatation with stasis do occur following vagotomy. These may well be the cause of the feeling of distension and wind pains which sometimes follow vagotomy. These symptoms have been markedly absent in those cases of duodenal ulcer treated by selective vagotomy by Griffith and his colleagues (1963), where the hepatic and cœliac branches of the vagi are left intact. Their part in the production of diarrhœa is really impossible to evaluate in view of the number of factors involved.

Gall Bladder and Biliary Ducts.

Tanuri and Ivy (1938) suggested that there might be some direct nervous influence on the secretion of bile from the liver in dogs, but the action of the vagi on the liver is unknown. Pallin and Skoglund (1961) showed that stimulation of the vagi caused an increase in pressure in the gall bladder of cats, the right vagus having more effect than the left. However, Johnston and Boyden (1952) state that complete vagotomy does not seem to alter the emptying rate of the human gall bladder and that this action must be under hormonal control. As the gall bladder dilates after vagotomy they suggest that the vagi are responsible for the tonus rhythm of the gall bladder in the interdigestive period and it is therefore unable to resist the influx of liver bile and consequently dilates.

The action of the vagi on the common bile duct and sphincter of Oddi does not appear to have been extensively studied. Myers and his colleagues (1962) were unable to show any pressure changes in the common bile duct suggestive of a peristalsis and no perstaltic waves could be demonstrated by cine-radiography. They were unable to show the presence of any muscle fibres in the common bile duct. Consequently all pressure changes in the common bile duct must be secondary to changes of pressure in the gall bladder, secretory pressures in the liver or changes in the tonus of the sphincter of Oddi. Bergh (1942) states that available evidence suggests a reciprocal innervation of the gall bladder and

sphincter of Oddi. Here again hormonal control may be more important but the vagus inhibits the contraction of the sphincter.

The fasting volume of the gall bladder often doubles within a year after total vagotomy (Griffith, 1962). The common bile duct may also dilate and it has been shown that it is possible to manipulate barium into the common duct. If the vagus causes inhibition of the sphincter of Oddi then vagotomy would allow increased tonus which would account for the dilatation. Burge (1961) found that preservation of the cœliac branch of the posterior vagus did not prevent diarrhœa or pale stools but when the hepatic branch of the anterior vagus was preserved "there was far less interference with normal function." The effects of vagotomy on the sphincter of Oddi deserves further study. Perhaps the stasis in the gall bladder and common bile duct and the suggested increase in gallstones in patients who have had vagotomies results from increased tone in the sphincter of Oddi.

Pancreas.

The pancreas receives parasympathetic nerves from the cœliac plexus which is itself supplied by a large trunk from the posterior vagus. The vagus is secretomotor to the pancreas. However, Rontley et al (1952) showed that vagotomy did not lower significantly the external pancreatic secretion in dogs. This is contradicted by the work of Pfeffer and his colleagues (1952), who demonstrated a net decrease in amylase activity of 337 per cent. after vagotomy in man. This may be an indirect result as well as a direct result as the pH of the gastric efflux is raised by vagotomy and may thus become a less effective stimulus for the liberation of secretion. Thus the full effect of vagotomy on the pancreas is not completely settled at this time.

Complications of Vagotomy.

Three main complications arise from the use of vagotomy as a therapeutic measure: —

1. Dilatation of the stomach with retention of its contents.
2. Diarrhœa.
3. Steatorrhœa.

The first of these is effectively remedied by performing a drainage procedure. This in itself may be a factor in the production of the post vagotomy diarrhœa so often cited as a contra indication to the use of vagotomy in the treatment of duodenal ulceration. Post-vagotomy diarrhœa is often an ill-defined entity and consequently after interviewing sixty-six patients who had had a vagotomy and drainage procedure the following four categories were considered to cover the post-operative bowel status of the patients: —

1. Troublesome diarrhœa.
2. Fluid or loose stools without any change in frequency or marked increase in frequency but no fluid stools.
3. Occasional loose stool or more regular defæcation.
4. No change in bowel habit.

Patients in categories 1 and 2 were considered to have post-vagotomy diarrhœa. The percentage of patients in each category was:—(1) 4.5; (2) 9.1; (3) 25.8; and (4) 60.6.

Thus 13.6 per cent. of the patients who had a vagotomy had sufficient changes in bowel habit to warrant being classified as having post-vagotomy diarrhœa, but 39.4 per cent. suffered a noticeable change, for which many were grateful.

Sixteen out of forty-nine of these patients had an average daily fæcal fat level of over 5 grams and were classified as having steatorrhœa. There was no significant difference in the incidence of this complication when pyloroplasty or gastro-jejunostomy was used for the drainage procedure and consequently the steatorrhœa is attributed to the vagotomy. Discovery of the cause or causes of post-vagotomy diarrhœa and steatorrhœa in the human subject is extremely difficult as the physiology of three main organs, the liver and biliary tree, the pancreas and the small bowel, is imperfectly understood and their study complicated. Selective vagotomy by leaving the vagal innervation to these organs intact may, however, demonstrate how deeply they are implicated, but much research is still required in this field.

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CLINICAL EVALUATION OF PENTOVIS IN THE TREATMENT OF SENILE VAGINITIS

By **T. WILSON RODDIE, M.B., B.Ch., B.A.O., F.R.C.O.G.**

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SENILE vaginitis is a distressing condition frequently encountered in gynæcological practice. It is an atrophy of the vaginal mucosa occurring usually at the time of the menopause. The thin mucosa becomes very prone to infection and often small superficial areas of granulation or ulceration develop. The common symptoms complained of are vulval pruritis, burning, and soreness. Also a rather thin discharge may be noticed and this can be blood-stained. In the later stages contraction of the vaginal lumen occurs with dyspareunia or complete inability to carry on marital relations.

In the treatment of this condition the common practice has been the use of hormone preparations applied locally or used parenterally. These have given equivocal results. There is, of course, no doubt that definite epithelial proliferation does occur in the senile vagina following this type of therapy. However, many women with senile vaginitis find the insertion of a medicated pessary difficult and painful and treatment is abandoned.

As the evaluation of all new medications for the treatment of senile vaginitis is important a clinical investigation was carried out, using the cyclopentyl enol ether of œstriol (Pentovis) orally. For this study all patients who complained of symptoms suggesting a senile vaginitis were examined gynæcologically and those with other pathological conditions excluded from the series. No special investigations were carried out and the conclusions arrived at are therefore purely clinical.

Altogether, thirty patients are included in the series. Each patient was instructed to take one 0.25 mg. capsule of Pentovis twice a day orally. The patients returned to the clinics at fortnightly intervals and their condition was assessed and the symptoms recorded. Each patient continued the treatment for a period of six weeks. The results of this treatment on the patient's symptoms were:—

Unchanged	-	-	-	3
Improved	-	-	-	12
Abolished	-	-	-	15

There were no side effects.

The improvement in symptoms was maintained in most of the patients treated for periods of up to three months. When symptoms returned the drug was again presented.

Clinically, these figures suggest that the use of Pentovis orally was effective in

relieving the symptoms of senile vaginitis. In the series there was no evidence that the drug had any unpleasant side effect or produced withdrawal bleeding. Pentovis therapy therefore merits further use, as it seems to be a valuable preparation in the treatment of a distressing and difficult condition.

SUMMARY.

1. A series of thirty patients suffering from senile vaginitis were treated with a 0.25 mg. capsule of Pentovis twice a day for six weeks.
2. The treatment produced a good result in the alleviation of symptoms. The results subjectively and objectively were satisfactory and no unpleasant side effects were noted.
3. It is considered that the preparation will serve the clinician well in the treatment of this condition.

The supplies of Pentovis capsules were made available, gratis, for this study by Dr. D. D. H. Craig, Director of Medical Studies, William R. Warner & Co. Limited, Eastleigh, Hampshire, England.

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The differing views have given this subject a cloud of obscurity and this has been helped by the many names used, i.e. congenital word-blindness, congenital dyslexia, cortical or subcortical dyslexia, specific developmental dyslexia. Dr. Macdonald Critchley's book resolves the confusion. It is beautifully written and easy to read. With the authority of one who has himself made many contributions he gives the neurologist's concept of a specific reading difficulty. It is a scholarly book with over 350 references from the Anglo-Saxon, German, French and Scandinavian literature. Even were one not to agree with the entity of developmental dyslexia, the reader would find much to interest him and excite his imagination. The arguments Dr. Critchley puts forward are closely reasoned and concern the persistence into childhood, the peculiar and specific nature of the errors made by these patients in reading and writing, the familial incidence and the frequent association with other symbol-defects. There are good chapters on ophthalmological aspects and on cerebral dominance. One's attention is held by some delightful quotations from the literature and we all take a morbid curiosity in wondering whether Hans Christian Andersen and King Karl XI of Sweden were dyslexic or not. Some American educationists may be right in considering the dyslexic "a late bloomer" but not all clear up in adult life. I would strongly recommend this little book to clinicians and all associated with the problem of the poor reader. L. J. H.

TEXTBOOK OF ABNORMAL PSYCHOLOGY. By N. H. Pronko, Ph.D. (Pp. xxiii + 446; figs. 25. 68s.) London: Baillière, Tindall & Cox, 1963.

It is unusual for a textbook to be written in a conversational style that is reminiscent of a monthly publication with a world circulation of several millions. This is refreshing and effective in the narrative portions of the book, but tends to become tedious when it is employed continuously. Rather naive rhetorical questions, such as that referring to the mental state of a hypothetical man from Mars (p. 76) and the very frequent use of "et cetera" (written in full) tend to irritate rather than stimulate thought.

The author clearly defines the aims of his book in the preface. He is dissatisfied with present-day theories of causation in mental illness, and justifies the rather unusual collection of subject matter in some chapters on the grounds that grouping certain behavioural facts will provide pointers to newer and different questions that may be more fruitful in the future. Physicians will have reservations about this attempt to relate phenomena on a behavioural basis when they see aphasia dealt with in the chapter on hysteria. His description of a case of aphasia with brain injury would seem to have been more appropriate in chapter 3. The author quotes extensively, and in places at length, from a section of the literature on modern behavioural psychology, supported by numerous case descriptions. He also draws on the descriptions of poets and novelists in much the same way that the economic historian regards similar data as confirmatory evidence of social trends. The chapter on schizophrenia is noteworthy for its historical perspective of theories of causation, both old and new, but the chapter on "obsessions—compulsions," lacks clarity for want of a satisfactory definition initially of what is being considered. For instance, what is described as command automatism to television would be regarded in Europe as a novel form of echopraxia. Had the author made clear at the beginning of the chapter instead of at the end, that his grouping of conditions depended on behavioural situations rather than on a disease or state, his purpose might have been clearer.

The extent of the bibliography is an index of the very considerable amount of work that was involved in writing this book. In the reviewer's opinion it will be of most value to postgraduates who can appreciate the differences between trends in the United States and this country in the ways in which attempts are being made to throw new light on abnormal mental processes. The statistically-minded would be most acutely aware of these differences.

The book is worthy of a place in a library. It is a serious study from a definite standpoint, and in addition provides many useful summaries and references to theory. J. G. G.

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HYGIENE IN THE HOME. By Elisabeth Norton, B.Sc., D.I.C. (Pp. 160; figs. 35; plates 5. 9s. 6d.) London: Mills & Boom, 1964.

THIS well produced book has an informal and friendly approach and is designed especially for girls who will soon leave school. It starts with the family in the home and considers personal hygiene, the house, heating and ventilation, water supplies and sanitary services. It has three well-informed and balanced chapters on food, on food poisoning and on the handling and preservation of readily infected food. It concludes with a brief survey of the benefits available from the national welfare services. It is a balanced presentation free from fads and fancies and is carefully written so that it is easy to read. It could be read with profit by many both young and old and is extremely well produced for the price.

NEW IDEAS ON REHABILITATION. Report of a Study Day on Facilities for Education, Rehabilitation and Care Services. (Pp. 102. 10s. 6d.) London: Chest and Heart Association, 1963.

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CLINICAL TOXICITY OF COMMERCIAL PRODUCTS. By M. N. Gleason, R. E. Gosselin, and H. C. Hodge. (Pp. 1188. 176s.) London: Baillière, Tindall & Cox, 1963.

THE greater part of this huge compendium describes the contents of 14,000 American commercial products, medicines, cosmetics, pesticides, cleaning agents and thousands of other materials which might on occasion be the cause of poisoning. They are listed under their trade names in alphabetic order.

More useful to the British reader is a small section indicating in broad terms the constituents of many different types of products from stain remover to golf-ball centres, from ballpen ink to caterpillar pesticides which might be found in the home or the factory.

There is a section on First Aid, a rather turgid and repetitious section on the toxicology, symptoms and treatment of some 70 "type poisonous materials," and a section on supportive therapy.

In this country I think the book might have had some place on a doctor's bookshelf before September, 1963. Since that date any doctor can obtain information about the constituents of most British commercial products by ringing the nearest Poisons Information Centre (in Northern Ireland, ring the Royal Victoria Hospital, Belfast 30503, ad ask for the Poisons Information Centre).

Useful as it is to be able to learn the constituents of some material that a patient has ingested, it must never be forgotten that the successful handling of poisoned patients is a matter mostly of commonsense and of competent symptomatic treatment of respiratory depression, the anoxic state, renal or hepatic damage, etc., as and when they arise. This can be carried out perfectly adequately even if the nature of the poison is not known. It is because we forget this that most of us have a haunting fear when we are called to a case of poisoning that there may be some potent antidote which we should be administering. This massive compendium to my way of thinking reinforces that irrational fear which so often seems to paralyse our actions. In fact, any special antidotes that we might ever need to know about are well and concisely described in the small 7-page section on poisoning in the British National Formulary. O. L. W.

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ALLERGY AND TISSUE METABOLISM. By W. G. Smith, B.Pharm., Ph.D., F.R.I.C., F.P.S. (Pp. 110; figs. 19. 25s.) London: Heinemann Medical Books, 1964.

DURING the last 30-40 years doctors have tended to regard allergy as a nuisance for which they usually had no satisfactory treatment. The more orthodox tended to regard the use of vaccines and other desensitizing procedures as dangerous and unreliable. Scientific evidence for their efficacy was lacking and good results claimed by some were thought to be in the mind of the observer by others.

Recently corticoids have proved an empirical treatment for this group of diseases but carry with them dangers which many are increasingly reluctant to risk. All would welcome a simple brief authoritative text on the mechanisms of allergy and anaphylaxis so as to place the treatment of this group of diseases on a scientific basis.

Unfortunately, although slim enough, Dr. Smith's learned work is not very helpful. It consists of a detailed review of the experimental literature, mainly on the pharmacological and biochemical aspects of the problem. By emphasising the lack of conclusive data, the contradictory evidence and the marked species and even organ variation in the biochemical changes associated with allergy, Dr. Smith convinces the reader that this is no field for the amateur. He is optimistic for the future as knowledge increases ". . . at the rate of between 25 and 50 papers per year. There is, therefore, reasonable grounds for optimistic belief that the accumulation of new data will permit . . . ," etc. His is a book of reference for the laboratory worker. Physicians must wait for a guide aware of their limited understanding. P. C. E.

TOWARDS EARLIER DIAGNOSIS: A FAMILY DOCTOR'S APPROACH. By Keith Hodgkin, B.M., B.Ch.(Oxon), M.R.C.P.(Lond.) (Pp. xii + 459; figs. 39. 30s.) Edinburgh and London: E. & S. Livingstone, 1963.

GOOD books on general practice are not common, and it is pleasant to be able to welcome an important addition to their number. In his preface Dr. Hodgkin explains how, when he began general practice some fifteen years ago, he was impressed by the extent to which the pattern of illness differed from that seen in hospital practice. In particular he was struck by the necessity for the family doctor to have an efficient working knowledge of the early features of a wide range of diseases.

The aim of his book is to save others from the need to learn "by time-consuming trial-and-error methods."

He has made careful observations on his work for many years, and the main part of his book consists of these records, systematically arranged and written up in a clear, concise and readable style which often bears the authority of direct personal experience. For each disease notes are given on aetiology, diagnostic incidence in general practice, age incidence, clinical pointers, investigations, duration, complications and pitfalls in diagnosis.

The first part of the book consists of some short chapters on clinical aspects of general practice and contains many wise and helpful observations.

Among the interesting diagrams is one which compares the incidence of a large number of conditions in general practice as compared with hospital.

I would especially recommend this book to any young doctor just beginning general practice. It would be of great practical use to him, explaining much that he would otherwise find puzzling, and helping him to understand the importance of his work and the interest and satisfaction that it can afford. R. P. M.

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TREDGOLD'S TEXTBOOK OF MENTAL DEFICIENCY (SUBNORMALITY). By R. F. Tredgold and K. Soddy. Tenth Edition. (Pp. xii + 530. 60s.) London: Baillière, Tindall & Cox, 1963.

THIS latest edition of Tredgold and Soddy's Textbook of Mental Deficiency in many ways represents a healthy departure from static descriptions of pathological states alone to a more dynamic approach to the understanding of problems of social and psychological adjustment in mentally defective individuals. This owes much to the lessons learned from Child Psychiatry, and indeed the chapters on normal mentality, the subnormal mind, and disorders of relationship formation would be equally relevant in a textbook on that subject. The descriptions of child development and its anomalies are essentially clinical, and might not satisfy the academic psychologist, but they are none the less valuable for the positive therapeutic approach embodied in them.

When discussing disorders of relationship formation, the authors state that ". . . time still provides the most rational approach to classification that has so far emerged" (p. 174). Thus the severity of defects are assessed in terms of norms of development for the various age groups. Structural diagnoses are reserved for the more orthodox descriptive parts of the book.

The authors condemn the too widespread use of the term "schizophrenia" to describe a wide variety of severe behavioural disturbances in subnormal children (pages 99 and 152), rightly regarding it as both misleading and a hindrance to a better understanding of aetiology. They criticise psychopathological formulations that do not take into account the effects of parental attitudes on ego development in these conditions.

The main clinical syndromes are described with the customary clarity found in earlier editions of the book. The collaboration of six contributors has broadened and enriched the text.

It is the reviewer's opinion that this book will maintain its position in the literature on mental deficiency. In addition to postgraduate students of psychiatry, paediatricians and child psychiatrists will find in it much of relevance to their branches of medicine. J. G. G.

A SYNOPSIS OF BLOOD GROUPING THEORY AND SEROLOGICAL TECHNIQUES. By A. Derek Farr, F.I.M.L.T., A.I.S.T. (Pp. xvi + 108; figs. 9; tables 23. 21s.) London: William Heinemann Medical Books, 1963.

THE author is Chief Technologist of the North-East of Scotland Blood Transfusion Service, Aberdeen, and this book has been written for the laboratory technician coming to the subject for the first time. It more than covers the syllabus in blood group serology required for the intermediate and final examinations of the Institute of Medical Laboratory Technology.

The book's layout is well planned and clear; the index is adequate and there is a good glossary of terms commonly used in blood group serology. Rightly, in this type of book, few references to original works are listed, but there is a useful bibliography for those who wish to study the subject at greater length.

The first chapter is devoted to the history and significance of the blood groups, and your reviewer feels that more than a page-and-a-half could be made of this in future editions, giving credit to blood transfusion pioneers like Robertson, and less space in another chapter to the possibly unreliable and expensive blood grouping method on "Eldoncards." Apart from these minor criticisms this is an admirable book and can be thoroughly recommended to laboratory technicians and many doctors who have the day-to-day responsibility of blood transfusion. C. C. K.

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PERIPHERAL ENTRAPMENT NEUROPATHIES. By Harvey P. Kopell, M.D., and Walter A. L. Thompson, M.D. (Pp. 163; figs. 68. 60s.) London: Baillière, Tindall & Cox, 1963.

THE authors define entrapment neuropathy as localized injury and inflammation in a peripheral nerve caused by mechanical irritation from some impinging anatomical neighbour. Although external trauma may have occurred at the entrapment area there is no discernible relationship between the force and the damage to the nerve. Median nerve compression in the carpal tunnel is a typical example. It is only fifteen years since the carpal tunnel syndrome has been adequately characterised yet it is now one of the most commonly recognised conditions and its treatment is both easy and effective. One shudders to think of other similar painful syndromes which may still be eluding recognition. To this extent the authors have made a valuable contribution. They have collected many interesting examples, some common and some distinctly rare and the clinical features are well described. There are some surprises in the layout of the book. Thus it begins with consideration of the lower extremities, the rationale for which may be that both authors are orthopaedic surgeons. More serious criticism is the scanty attention to electrodiagnostic techniques. There are passing references to electromyography and some inadequate illustrations of nerve conduction studies but one would have liked a note on the feasibility and method of electrodiagnosis for each nerve that is mentioned. The short bibliography is a disappointment for the British reader as only one of the innumerable and classical papers from this country is mentioned. The book is a little difficult to read in places, particularly the chapter on the spine and its associated neuropathies. Besides the frequent median, ulnar, radial and popliteal nerve lesions there are well composed chapters on interdigital, obturator, suprascapular, dorsal scapular, saphenous and ilioinguinal nerve syndromes. Because of this book, I for one, and others too, will be on the look-out for them clinically. It should be in the library, but clinicians may not find it sufficiently erudite to make their own. L. J. H.

PAIN: ITS MEANING AND SIGNIFICANCE. By Ferdinand Sauerbruch and Hans Wenke. Translated by Edward Fitzgerald. (Pp. 151. 25s.) London: Allen & Unwin, 1963.

THE eminence of the senior author will attract many readers in various disciplines to this book. It has interest and value, but the style is discoursive and the material is not presented so as to sustain the interest of the general reader. At the same time the specialist reader will probably find the work insufficiently documented. He will find much of the material somewhat speculative and while he may find some reflections of interest he will find others insufficiently supported and inadequately developed.

THE EYE IN GENERAL PRACTICE. By C. R. S. Jackson, M.A., B.M., B.Ch.(Oxon), D.O.M.S., F.R.C.S.(Ed.). Third Edition. (Pp. viii + 164. 25s.) Livingstone, 1964.

WE have welcomed previous editions of this useful textbook written by a former general practitioner who is now a consultant ophthalmologist to help those in practice with the problems they are likely to encounter. The emphasis is on the recognition of those eye conditions where treatment is simple and adequate and on their separation from those requiring specialised skill. This book should now have an established place in the library of the practitioner.

PERIPHERAL ENTRAPMENT NEUROPATHIES. By Harvey P. Kopell, M.D., and Walter A. L. Thompson, M.D. (Pp. 163; figs. 68. 60s.) London: Baillière, Tindall & Cox, 1963.

THE authors define entrapment neuropathy as localized injury and inflammation in a peripheral nerve caused by mechanical irritation from some impinging anatomical neighbour. Although external trauma may have occurred at the entrapment area there is no discernible relationship between the force and the damage to the nerve. Median nerve compression in the carpal tunnel is a typical example. It is only fifteen years since the carpal tunnel syndrome has been adequately characterised yet it is now one of the most commonly recognised conditions and its treatment is both easy and effective. One shudders to think of other similar painful syndromes which may still be eluding recognition. To this extent the authors have made a valuable contribution. They have collected many interesting examples, some common and some distinctly rare and the clinical features are well described. There are some surprises in the layout of the book. Thus it begins with consideration of the lower extremities, the rationale for which may be that both authors are orthopaedic surgeons. More serious criticism is the scanty attention to electrodiagnostic techniques. There are passing references to electromyography and some inadequate illustrations of nerve conduction studies but one would have liked a note on the feasibility and method of electrodiagnosis for each nerve that is mentioned. The short bibliography is a disappointment for the British reader as only one of the innumerable and classical papers from this country is mentioned. The book is a little difficult to read in places, particularly the chapter on the spine and its associated neuropathies. Besides the frequent median, ulnar, radial and popliteal nerve lesions there are well composed chapters on interdigital, obturator, suprascapular, dorsal scapular, saphenous and ilioinguinal nerve syndromes. Because of this book, I for one, and others too, will be on the look-out for them clinically. It should be in the library, but clinicians may not find it sufficiently erudite to make their own. L. J. H.

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Though the authors are predominantly American, people from other parts of the world have written chapters where their special knowledge made it appropriate. It was pleasant to see two professors of Physiology from Queen's in this elite. Barcroft has a chapter on the circulation in skeletal muscle and Greenfield has another on the circulation through the skin. Other authors deal with the regulation of the circulation in the lung (A. P. Fishman), heart (D. E. Gregg), kidney (E. E. Selkurt), liver (S. E. Bradley), etc. G. E. Burch and L. N. Katz have chapters on vascular diseases. There are other chapters on arteriovenous pathways, the importance of lymph, the venous system, exchange of substances at capillary walls and the biophysics of flow in arteries

The volume makes an important contribution to physiology and the American Physiological Society are again to be congratulated for sponsoring the series. I. C. R.

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