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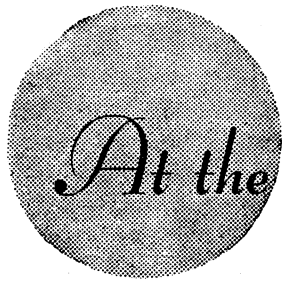

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THE
ULSTER MEDICAL JOURNAL

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Vol. XII 1st NOVEMBER, 1943 No. 2

A Question of Race

By WILLIAM DICKEY, M.B.

Presidential Address, Ulster Medical Society

IN the "Lancet" of 17th October, 1942, it was shown by Ridehalgh that Irish nurses seemed to be more susceptible to tuberculosis than those of Great Britain; this was followed by a leading article on 31st October, 1942, on Tuberculosis in Eire. Again attention was called to the apparent susceptibility of the inhabitants of Ireland to tuberculosis. This is a subject which has interested me since first I read in Osler that the Irish in America have a very high death-rate from tuberculosis, almost double that of the next people on the list. In 1907 I heard, in the Ulster Hall, one of my teachers declare roundly that the Irish race are especially susceptible to tuberculosis. Unfortunately, the facts on which these statements are founded still remain facts. The incidence of tuberculosis in Ireland and the death-rate from it remain distressingly high when compared with other countries. In 1927, when England and Wales had a death-rate of 97 per 100,000, the Irish Free State had one of 145, and Northern Ireland 141. In 1937 the rate had dropped in England and Wales to 69.5, but in the Irish Free State it was 123.4. In Northern Ireland, however, it had fallen to 97.7, which was still far too high, so that notwithstanding every advance in the welfare of the people, made good up to date, the rate remains excessively high relatively to Great Britain.

Now, this may be due to several factors. That one which the learned professor had the toughness to formulate, namely, that there is a racial weakness, has never been disproved. Usually it is placed mysteriously in the background, denounced half-heartedly, it is true, but one is generally left with the impression that there may be something in it. Nor is this to be wondered at, for the subject is a very difficult and complex one in itself, and it borders on such regions of prejudice and emotion that to attack it is a task which cannot be undertaken without some hesitation. However, in such a case the lightly equipped general practitioner may rush in where experts fear to tread, and perhaps may hope to escape from this

thorny problem with fewer scratches. In any case it may provide enough to interest you for a while, and perhaps we may even get a little profit from it.

Popularly, race is accepted as a self-evident fact; to deny its existence seems opposed to common sense. If we think not only of the differences that seem so obvious between European peoples, but of those, throughout the world, between Europeans, Negroes, Chinese, and Australian aborigines, we see variations so great that there has been serious discussion as to whether mankind can be included in a single species or must be divided into several. Yet, notwithstanding all this, we have Professor Dahlberg writing: "The assumption that pure races exist or have ever existed is purely a hypothesis which has very little scientific basis," and Huxley, Haddon, and Carr Saunders also state: "Race turns out to be a pseudo-scientific rather than a scientific term." On the other hand, the subject of race is still an active scientific study. In the current numbers of the "Ulster Journal of Archæology," for example, you may read extremely interesting and learned articles by Professor Walmsley, with Mogey and Gamble, on the "Peoples of Northern Ireland," and if we consider that this science deals from the physical side with the nature, origin, history, and destiny of man, we will find it impossible to exaggerate its importance, and especially now, when false conceptions of race have caused such horrible disasters in the world, and also when, as some believe, the world has become a single unit in which there will be free miscegenation of all varieties of mankind, with what consequences science as yet can tell us little. It is scarcely possible, also, to take up a medical book or a medical journal without finding some reference, somewhere, to race. It is evident, therefore, that there is justification for an attempt to discover how all this bears on medicine.

Our objective, then, is strictly limited. We do not and cannot go into the question of race in general, except in so far as it bears on our subject, namely, "Is race a factor in the causation of disease?"

In considering race, disputes often arise from failure to define properly the terms used. First then, let us begin by saying that a population, all varieties of which can and do interbreed freely, is a single species. Still more necessary is it to define the meaning of the word "race." The very word is of indefinite meaning. It may be used for any class of living things, for example, the race of poets, the Aryan race, the race of birds, the human race, and so on, but the sense which concerns us is that a race is a human population with common hereditary physical characteristics derived from common descent, and we have especially to beware of two meanings which are likely to confuse the issue of our enquiry; that is, the use of the term to designate populations of similar culture and traditions, and also populations which speak the same or similar languages. We have plenty of evidence in Europe to-day of the dire consequences which may ensue from confusion of these senses of the term. Nor is it only in Germany that a demagogue may use the word in such a way that in one speech it may mean any or all of these things, so that from premises not easy to refute because of their vagueness and plausibility he can persuade the populace to his disastrous conclusions. As nations were supposed to be of common descent, when nationalism arose in Europe it was easy to use the

term 'race' as synonymous for nationality, especially for the nationalities which were struggling for freedom, and as language was usually the badge of these nationalities, it was natural that language should be accepted as the mark of race.

The work of philologists and often of historians lent scientific plausibility to this view of the matter, so that a linguistic definition of race was a common one in the nineteenth century. The inhabitants of Europe came to be classified as belonging to the Teutonic race, the Celtic race, the Slavonic race, and so on, and finally the philologists discovered the connection between the Aryan languages, and the Aryan race was born. These conceptions were adopted into the popular consciousness with political results which were sometimes unfortunate. They still survive in popular mythology.

The word race however still had the connotation of common descent, and this began to be investigated by the physical anthropologists, Topinard, Deniker, and others, and especially for the English-speaking world, Ripley, in his famous book, "The Races of Europe." They showed that physical types are distributed independently of language and nation. They found a mixture everywhere, though, of course, types were not distributed uniformly. In Northern Europe it was found that a large proportion of people had fair hair, blue eyes, tall stature, and long heads, though these characters did not occur together always, nor even often, but they assumed that a tall, fair-haired, blue-eyed, and long-headed people had at one time existed, and had formed an important part of the ancestry of these peoples. This people became known as the Nordic race.

Similarly, a smaller, swarthy, dark-eyed, dark-haired, long-headed race was distinguished in Southern Europe. This was called the Mediterranean race.

And in Central Europe a race just as well marked in physical characters, but broad-headed, was found to make up a large proportion of the population; this was called the Alpine race. Other races of less importance were also distinguished.

It thus seemed that, on indisputable evidence, the Celts, Teutons, and Slavs of the nineteenth century were to be displaced for ever by Nordic, Alpine, and Mediterranean man. The linguistic ethnology which had convulsed Europe had gone down before the callipers and the colour-charts of the physical anthropologist, and what seemed to be a happier era had dawned. But the ultra-nationalist is incorrigible; he used the new knowledge for his own base purposes as easily as he had the old. The world found itself not one whit the better for the displacement of the Teutonic by the Nordic race. But there were facts that did not fit in, and these presently led to an elaboration of Dinaric, Finno-Baltic, Atlanto-Mediterranean, and many other races that might have seemed to present a disconcerting analogy to the cycles and epicycles of pre-Copernican astronomy. Characters seemed to spread outside the domain of the race to which they had been assigned. Fair hair and blue eyes were found not only in long-headed populations, but also associated with broad heads, and even with distinct Mongolian physiognomy. Broad-headedness, itself, seemed to be associated with most varied physical characteristics, and so on. Now another factor arrived on the scene. Mendel had made his famous discoveries in

the sixties of last century, but they had lain hidden until revealed in 1900 by De Vries and others.

Fortunately, I can assume in this audience some knowledge of the Mendelian and other modern theories now universally accepted in the science of genetics, but I have to refer to some points necessary for the purpose of this paper.

The units in the conveyance of hereditary characters are the genes; what they consist of we do not know, but each gene has a definite fixed place on a definite chromosome. When a cell divides, the chromosome divides, and the gene also divides, giving rise to an identical daughter gene at the same position on the analogous chromosome of each daughter cell. The cell-chromosomes are in pairs; each pair consists of a chromosome derived from the germ-cells of each of the two parents, and each pair of chromosomes has analogous genes situated at similar positions on it. That is to say, each bodily character is governed not by one but by two genes, derived from the parental and maternal germ-cells respectively. But many physical characters are affected by several pairs of genes, and many genes affect more than one physical character. In each pair of genes one may prevail over the other and act as if it were absent. The prevailing gene is then said to be dominant, and the other recessive. The recessive gene can only show its effects when associated with a recessive partner in the pair. Sometimes, however, the prevalence is not absolute, and the genes both have an effect, which may be intermediate or even different from what they could effect separately; this is the condition of incomplete dominance. The genes may be considered as relatively stable. They do change, over long periods. Mutations occur, but they are the exception, and very often they are detrimental, so that their numbers in the population are kept low. But in the long period in which man has existed, there has been a certain amount of change, so that many genes now exist in two or more forms. These differing forms are called allelomorphs. But in considering present-day populations, the rate of effective change is so low that we can without too much error accept these allelomorphic genes as unchanging for very long periods, each gene passing from germ-cell to germ-cell for many generations without much alteration. In this we have the support of archæology, which has shown that in many countries, Egypt for instance, many physical types several thousand years ago were much the same as to-day. Man has forty-eight chromosomes in his body-cells, that is, twenty-four derived from each parent, or twenty-four pairs. These chromosomes must carry very many genes, probably many thousands. The basis on which the concept of race rests must lie in the modification the various genes have undergone in the distant past. It is the effect of the differentiated allelomorphs which cause the differences in human populations. It would seem to be a hopeless task to try to get any complete view of the genetic constitution of any individual, to say nothing of any population. The theory of race presupposes, however, that the presence of a limited number of visible characters indicates a particular genetic constitution. If we examine the question, then, from the point of view of the visible characters, the matter is complicated, but we can find a number of them whose inheritance seems to be relatively simple, and it is to these that we may

go with some hope of light on our problem. For if populations with certain racial characteristics are prone to certain diseases, what concerns us is not the totality of the characters which give them the rank of race, but the single character of susceptibility to disease. And, if we can examine the behaviour of any genes, or rather of their associated characters, we can assume that what is true for these characters is likely to be true for the disease-bearing characters of which the existence is in question.

We have seen that the linguists and historians, although their conclusions were mistaken, believed that man should be studied as man; whereas the anthropologists and geneticists tend to regard him as an animal, using methods of study and reasoning which had been successful in biological matters. If man is an animal, he is very different from any other. Animal life is much more under the control of instinct and environment than human life. The swallow swings to and fro to its nest under the eaves, across half the world; the salmon returns to the river of its birth; the caribou wanders from winter to summer feeding-grounds unguided by reason or tradition. But for man the chains of instinct have been loosed. His guides are reason, emotion, imagination, tradition, and cupidity. For him Tir-na-nogue, the promised land, or eldorado, always lie just beyond the horizon; for him there are always gods or spirits to direct, the example of ancient heroes to follow, wealth to be gathered, adventure to be experienced, and curiosity to be satisfied, so that his path is incalculable. Neither sea nor mountain, nor heat nor cold, can bar his way. He can by the use of his reason and of his tools adapt himself to life anywhere, to all environments where existence is possible. The result has been that even within historic times every people of which we know anything has been through a complicated maze of wandering, conquest, emigration, immigration, and slavery. And if this is so during the comparatively short period of historic time, what must have been the total sum of nomadism throughout the immense period during which modern man has existed. The shadow of the Mosaic chronology still lies over us to-day. We are very apt to imagine that what has happened during the last three thousand years overshadows completely what happened in the illimitable past before.

It is a remarkable fact that there is only one single species of man in the world to-day, a species which is world-wide in its distribution and has no near relatives living. It is unique, and its uniqueness must be a consequence of some quality of its humanity. Few, if any, human groups could have existed in isolation sufficiently long to form distinct species. If any did, it would seem probable that the consequent loss of contact with *homo sapiens* and inability to profit from the new ideas brought by contact with other peoples, would in the end mean certain extinction, at the hands of its human enemies, long before it could attain a secure footing in the world.

If then, species formation was denied to man, how did he effect the physical adaptations necessary to different environments? In a species so continually hybridizing, the action of natural selection would be to preserve the genes governing the characters fittest for the particular environment, so that in time these genes

would exist in a genetic assembly very different from that in which they first appeared. For example, the black-skinned peoples of to-day may inherit their black skin from ancestors who were very different from them and from us. Natural selection of hybrids replaced the natural selection of species, so that the appearance of a striking and ancient character in a special environment by no means gives any clue to the genetic composition of its bearer.

Nor, in the case of man, is natural selection the only manufacturer of apparent races. Man can and does by the use of his peculiar mental qualities produce what are called artificial races. If gentlemen really preferred blondes, then generation after generation the race of gentlemen would become and remain more blonde. This is a short-term effect of which there are many examples. The most famous one is that of the Jews. The only physical thing that all Jews have in common is their Jewish appearance. Jews may be tall or short, fair or dark, long-headed or broad-headed. In short, they tend to approximate in physical characters to the people amongst whom they live. It seems, therefore, that in the past Jews preferred often to marry people who looked like Jews, and the Jewish appearance was the result. Another well-known example is that of the Basques. Those who live in Spain tend in hereditary characters to resemble the Spaniards, while those who live on the French side of the Pyrenees resemble in the same way the very different population of that part of Southern France, yet many of both sections possess the remarkable Basque head, wide at the temples, with long narrow face. This form of selection only affects visible characters, and has no relation to the hereditary constitution of the people concerned.

Now, let us consider the case from the point of view of the hereditary characters. First, we will take certain characters that are not visible, nor, so far as we know, linked with any physical characteristic. Characters which are certainly not concerned in artificial selection, and which probably are not much affected by natural selection, that is the blood-groups A, B, and O. These are inherited in a relatively simple manner, though, as you know, their inheritance is quite enough complicated. Their distribution is remarkable. Group A occurs in especially high frequency in western Europe; group B is high in southern and eastern Asia; and group O very high in the aborigines of America. This distribution could be and has been considered as indicating racial differences. But the matter is not so simple. Group B is by no means confined to Asia, nor is group A to Europe. Group O is also common everywhere. Not only so, but there is no correlation with any racial mark. The most Nordic of Norwegians may be group B, and the most Chinese of Chinamen group A. Neither skin-colour, hair-colour, stature, nor head-shape affords any certain indication of blood-group; although, however, it is probable that, before European immigration into North America, practically all the Indian inhabitants belonged to group O. The most probable conclusion is that O was the original blood-group, that A arose by mutation, possibly, in Europe, B in the same way in Asia, and that ever since they have been spreading over the earth unhampered either by natural or artificial selection. The curious fact results that African Negroes and Australian aborigines are not very different in distribution of blood-groups from

white Europeans. And doubtless groups A and B are steadily invading to-day the blood-stream of the North American Indians. It is probable that hybridization has brought about the spread of these groups here and there all over the world unhampered by the forces which act on visible characters. They are a testimony to invisible miscegenation, and doubtless multitudes of other genes which have no effect on visible characters have had a similar history.

A second example is the absence of pigmentation in the skin. We have all heard of the White Race. A race which includes Englishmen and Turks, Italians and Norwegians has always been of doubtful authenticity, but it is a fact that white skin prevails in a continuous area over Europe and part of western Asia. This is unlikely to be due to chance.

Mutations causing loss of pigment in the skin are usually associated with the disadvantages caused by albinism. One that occurred without those disadvantages must be exceedingly rare, and the chance of its getting established very slight indeed. There is scarcely an authenticated case outside Europe. The best-known example is perhaps the San Blas Indians in Central America, but here, as in other cases, the condition is one of albinism with the usual visual defects and photophobia. Hence it is probable that the mutation that led to the establishment of white-skinned peoples appeared first in one place. Such a mutation was an advantageous one from the point of view of natural selection in the cloudy north, with its long dark winters and need for clothing, enabling its possessors to make the utmost use of the scanty and brief sunlight. And it is just here that we find it, especially, in association with fair hair and light eyes, which would be likely to arise at the same time from the same cause. But if it was a favourable mutation in the north it would be likely to migrate wherever its possession was advantageous. That it did so was evident, and as it left its original northern habitat, it came to be associated with the very varied physical characters favoured by nature or man in its new homes.

It is also evidence that movements of population from north to south are very ancient in Europe. Thousands of years before the fair-headed Achæans arrived in Greece, similar movements of population must have been taking place. A third example is the distribution in Europe and Asia of broad-headedness. It extends right across the land-mass from Mongolia to France. Again we can assume that the continuous area means spread from a single focus. So that the genes involved are now common to peoples so different as the Mongols and Swiss.

We may draw some tentative conclusions. Genes and the characters governed by them migrate freely and in the long run show no linkage. The genetic linkage due to occurrence on the same chromosome seems largely to be cancelled out by the process known as crossing over. But it must be remembered that many genes affect more than one character, and that, for example, a gene that affected any of the endocrine glands would cause variation in many characters. Genes which are fitted to a certain environment by natural selection and those which are selected by man himself are no sure guide to the presence or absence of other genes. Therefore,

every so-called race must comprise many genes in common with the population all around it.

Race, as it is commonly recognised, depends on an assemblage of visible characters, each of which taken by itself is likely, in nearly every case, to occur in many other populations. Nor are all or any of these characters a certain guide to the amount of genetic kinship with other peoples.

There has been intermingling of populations all over the world, throughout human history. The degree of intermixture found at any time or place would depend on how far the population was isolated by geographical or other factors. In the far distant past, when man's equipment for overcoming geographical difficulties was limited, the degree of isolation may have been sufficient to allow of the formation of actual geographical races, analogous to those existing in the animal world, and from that period may date characters which constitute some of the most striking visible differences between men to-day.

Now let us return to Ireland, where we began, and see if we can apply these principles. Ireland is an island, and an island may be supposed to be in a position of relative isolation. But an island is at the mercy of foreigners who have learnt to control the sea. Ireland in the Palæolithic Age no doubt at times had land connection with the Continent, and so far as it was habitable, was not isolated. But it seems probable that the human population of Ireland must have arrived by sea. It is not for nothing that one of the famous ancient books of Ireland is called the "Book of Invasions." Control of the sea is very ancient in Europe. We have in the south the evidence of the seafaring civilization of Crete, which could only have come into existence after a long evolution of sea-going craft. And in the north we can see sculptured on the Scandinavian rocks the great war canoes of the Bronze Age, of which the same can be said. Thus isolation in the British Isles was, probably, as precarious in the Neolithic Age, and after, as it has been since the Viking Age. Race in Ireland, as elsewhere, has been determined by various arbitrary race-marks, such as stature, cephalic-index, head-form, colour of skin, colour of eye and hair, and so on. If we take these separately, we find, to put it moderately, that there is not very much difference between Ireland and Great Britain. Tall stature is just as common in one as in the other, cephalic-index much the same, light eyes very common in both, skin colour is very light in both, even hair colour covers the same range. It is true that in Ireland hair colour is rather darker, and eye colour rather lighter, a curious fact that may point to some period of sufficient isolation to allow of the formation of an artificial race with dark hair and light eyes. If this be true, it indicates the very ancient arrival of Nordic physical characters in Ireland. Light eyes and white skin can only have come from the north. In fact, by the use of a little hydrogen peroxide, Cathleen ni Houlahan could be converted into a Nordic who would satisfy the standards of the most rabid Nazi. It is very evident then, that if we consider these characters separately, not one of them is peculiar to Ireland. Even if we take characters that occur only in a minority of the population, such as black eyes, or broad heads, these occur also in a minority of the British population. What room then is there for the hypothetical

character which renders the inhabitants of Ireland susceptible to tuberculosis? It should, alone, of all these characters, exist in high frequency in Ireland, and low frequency, or not at all, in Great Britain. It should exist despite natural selection, and could not be favoured by artificial selection. It would contradict what we have seen to be true of the other characters. The hypothesis, therefore, is ridiculous. The causes of the alleged susceptibility of the Irish to tuberculosis must be looked for elsewhere. If they can be found in bad sanitation, bad social habits, malnutrition, and poor housing, then we have a responsibility which we cannot shelve on to some alleged mysterious and inevitable evil racial predestination.

Now, if these considerations are valid in Ireland, it is very likely that they are valid elsewhere. Let us take a few examples of so-called racial diseases, and see if we can find another than a racial explanation for them. We will find that apparent racial susceptibility to disease can, usually, be shown to be due to other causes. Many diseases seem to have a racial distribution. The simplest case is that in which the disorder is consequent on some character recognised as a mark of race. It is said that in Australia, white-skinned people often exposed to fierce sunlight may occasionally develop epithelioma of the face, an obvious consequence of the frequent irritation caused by sunlight on the unpigmented skin. Similarly, Negro children in New York are especially prone to rickets, and this, although poor nutrition is also a factor, may be correlated with their inability, owing to the pigmentation of their skin, to form sufficient quantities of the necessary vitamin. Again, tuberculosis in North America is excessively common amongst Negroes. According to Kayne, comparing Whites and Negroes, "There can be little doubt that a racial difference in resistance to tuberculosis exists," and he adduces similar evidence from the gold mines in South Africa. Here also, as in Ireland, we have to consider the unfavourable environment, bad sanitary conditions, malnutrition, bad social habits, and sometimes previous inexperience of the disease, but, in this case, when these things are allowed for, the evidence of high susceptibility remains.

But there is another factor, that is, the deeply pigmented skin of the Negro. Is it any wonder that these children of the sun, shielded from his beneficent rays, not only by the dark skies and thick clothing of the North, or, in South Africa, by the gloomy twilight of the mines, but also by their darkly pigmented skins, should develop tuberculosis? When we have added to this, extremely bad sanitary conditions, it would be astounding if they did not. In these cases the susceptibility to disease depends not on the race, but on one or two characters which may accompany a very varied genetic constitution. The susceptibility of the Negro to lobar pneumonia is also well known. In this case, also, as soon as the mysterious word race is thought of, its paralysing effect is enough to stop any further inquiry. Yet, if we think of the adaptation of the negro skin to rapid cooling, the increased radiation from its black surface, and its remarkable development of sweat glands, we may think that a possible cause, which is worth investigation, lies there.

Now, let us take an example of a different kind, one of the numerous cases affecting the Jews. There is a disease called amaurotic family idiocy. This occurs almost solely in Jewish families. It comes on in infants, from about three to six

months old, it may attack several members of the same family, progressive bodily and mental weakness sets in, the child becomes blind and paralysed, and finally dies. The parents are usually quite normal.

The Jews are often isolated from their neighbours by their religion. That isolation, as we have seen, is by no means perfect, but in small communities it is, unfortunately, often perfect enough to produce genetic disaster. A small community is likely to show an undue amount of interbreeding. If a detrimental recessive gene occurs in it, it is very much more likely to be matched with its like on fertilization, than it would in the great world outside. The case is simply one of two recessive genes, carrying defective characters, coming together. Outside the community, the small number of recessives have a very small chance of meeting their like, and remain hidden under the control of their dominant and healthy partners. Inside the community their chances of meeting are much increased, and the apparent racial difference results. Such occurrences are by no means limited to the Jews. The village idiot is no accident. He was an indication of the isolation of some villages in the past, and is becoming less common with the intermixture of blood following on modern conditions.

Then there are such cases as that of sickle-cell anæmia. This disease is rare, it occurs in Negroes and Mulattoes. The red blood-cells are sickle-shaped, and the signs and symptoms are those of anæmia of various degrees of severity. It is related to a defective dominant gene. In this case we have, probably, an example of a disease that has arisen by mutation amongst Negroes, as many diseases have arisen amongst Whites. The only difference is that it occurs where Whites and Negroes are in contact, and has not yet passed over the colour line. The partial isolation of the Negro and the rarity of the condition are quite sufficient explanation, and doubtless, in time, it will attain the dubious distinction of being associated with a white skin.

Now, let us consider the numerous cases where disease seems to take on an exceptional virulence in certain peoples who have not had previous experience of it. We will take the striking and tragic case of Polynesia. After the first contact with Europeans, many Polynesian islands were devastated with epidemics of European diseases. Measles, whooping-cough, dysentery, tuberculosis, and syphilis, slew the natives in tens of thousands, whole communities were exterminated, the population steadily dropped. It seemed evident to all, even to the Polynesians themselves, that they were a dying race, and that the Pacific was fated to be repopulated by Asiatics. This splendid people, living in what the old voyagers thought to be an earthly paradise, had dropped in numbers from, probably, well over a million, to a mere 180,000 in 1910, and seemed well on the way to extinction. But the unexpected happened, the decline stopped, and rapid increase of population began. The Maori have more than doubled their numbers, the Samoans have increased by sixty per cent., the Tongans by thirty-seven per cent., and so throughout the Pacific, even amongst the communities with little European blood. What was the cause of the catastrophic decline and of the astonishing recovery? It has been said that the remedies for a dying race are proper feeding, proper housing,

and effective sanitation. There is no doubt that this is true. The numbers of our own ancestors were held in check for centuries by disease, otherwise there would not have been standing-room on the earth, and the increase in Polynesia, as in Europe, is no doubt due to better hygienic conditions. But is it the whole truth? Some of these populations lived under what Europeans regarded as ideal conditions, and were healthy, well-fed, and happy, before the European serpent had penetrated into their Eden. Their social habits were sometimes, no doubt, dangerous under the conditions of European civilization, but that will not explain the whole matter. These dreadful epidemics were deadly because the infections were new to the islands. They were inexperienced in resisting European diseases. Their sanitary conditions are now improved, but they have also acquired at a terrible cost the necessary resistance, and rapid increase of population is the result. Then there is this question of acquired resistance by a people. Thousands of little Polynesians arrive annually in Polynesia without any experience of these diseases. Why do they not die as their predecessors did? Natural selection is the usual answer. But natural selection, acting under Mendelian conditions, is unliikely to have had such a dramatic effect in the space of two or three generations, even in the drastic form in which it was applied in Polynesia. The same would be true of Lamarckianism, if such a thing exists : there is not sufficient time for such a change. These children differ from the children of Polynesia of a hundred years ago in but one thing : their parents have had experience of these diseases. Some have thought that infants in the uterus may acquire from the mother protection from the diseases against which she is protected, and if that were so, it would go far to explain the facts, and also certain facts much nearer home. I am assured, however, on very good authority, that the weight of opinion is that such an effect does not occur. If this is true, a curious discrepancy results. The deadly anti-rhesus antibodies can pass through the placenta, whilst the beneficent antibodies to disease cannot, which seems not altogether probable. No doubt, the baby of Mrs. Jones, who had recovered from measles before her confinement, and that of Mrs. Smith, who perhaps has not had measles at all, are both equally susceptible to infection, but neither of them is so likely to take measles and die, as the Polynesian infant of one hundred years ago. In other words, they certainly have got something which renders them less susceptible to infection, and where did they get it? I do not think the question can be said to be closed. We have found, now, in each case we have examined, an alternative explanation of the excessive incidence of disease to that of race. And, doubtless, many other cases are capable of similar explanation. We conclude, therefore, that a racial explanation of susceptibility to disease must be suspect, and that on examination, a better reason for the facts will always be found. Our inquiry is now over. We have seen man with all his varied characters, mingling over the face of the earth for untold ages. Sometimes pouring like a flood in innumerable currents, at others, resting in quiet pools and reaches, as the dam of isolation is broken down or holds. Thus his characters are concentrated here and there in different degrees and in different combinations, as isolation increases or decreases, but ever escaping into new associations as civilization and the capacity for move-

ment develops. These combinations of characters are what are called races, and it is in that sense that the study of race is so urgently necessary, and remains of the utmost importance. But these ever-changing entities form a very unstable foundation for any conception of susceptibility to disease. Everywhere miscegenation is going on, and has been going on for as far back as we have evidence. Genes cannot be isolated for long in any permanent association with more than perhaps a few other genes, so that no defective gene can remain for long linked to any of the characters which are used to mark out races. Therefore, whatever the truth about race in general, in medicine we must agree with Huxley: "Race is a pseudo-scientific term," which should have no place in the study of disease. Its use obscures the truth, prevents the recognition of the real causes of disease, and the application of the correct remedies, and, in especial, there is no evidence of any racial susceptibility to disease in Ireland. If there seems to be such a susceptibility, it is due, not to race, but to causes which are preventable, and it is our responsibility to do what we can to prevent them.

REVIEW

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Possible Worlds

By C. J. A. Woodside, M.B., F.R.C.S.I., Surgeon to the Hospital

Opening Address, Royal Victoria Hospital, Winter Session, 1943-44

No formula binds me in this so-called opening address, but it is more usual for the speaker to trace the historical evolution of some part of that branch of medicine of which he is a devotee.

Looking back in recent years, I find that this field has been so often cultivated, albeit by a rotation of crops, that I feel it should lie fallow for a while.

I might, in a popular address, recount the change and progress in my own subject, in my own time, but again I have been forestalled, for the shelves of the libraries and the movie screens are richly endowed with the drama and melodrama of surgeons' lives and doings.

Or if I knew how, I could advise and admonish you in what way you might shape your lives, so that fame and fortune would be your reward.

Since all these ways are barred to me, I propose to dip into the future, not as Tennyson wrote, "far as human eye can see, saw a vision of the world and all the wonders that would be," but only into a probable, practical future.

Whether we like it or not, change is in the air. My world and that of my colleagues will not be your world, and so it seems worth while to consider the shape of things to come. True, there is no unanimity about the form which this should take. At one end of the scale are those who have done well for themselves, and have grown old in well-doing, and thus find all for the best in this best of possible worlds. At the other end are those who feel like Omar Khayyám :—"Ah, love, couldst thou and I with Fate conspire to change this sorry scheme of things entire, would not we shatter it to bits, and then remould it nearer to the heart's desire." Neither outlook is intelligent, although intelligible.

The present is never static, and the past never negligible. In art, philosophy, and science, the foundations laid by great men still stand. It has been the self-seekers, the hoarders of knowledge for their own ends, who have stayed progress.

Between the builders of the pyramids and Epstein, Leonardo da Vinci and Picasso, Hippocrates and the leaders of modern medicine, the gap is relatively small.

So destruction of all that has gone before is likely to yield chaos and confusion.

As doctors, we must apply critical analysis to things as they are, and to this end ask one question :

Does every human being have the best opportunity of "mens sana in corpore sano," and if ill, the best chance of restoration to health or to amelioration?

To this there is but one answer—no ! Because of this answer, many schemes are afoot.

State medicine visualises presumably a great army of doctors incorporated in a civil service, filling innumerable forms, until all the ills of all mankind are solved by pen and ink or typewriter.

Some doctors, seeing their personal interests in private practice threatened, would like a system of group practice—that is, a congerie of self-styled specialists grouped in little cliques to capture all and sundry victims of ill-health. Others see in health centres a panacea for all ills.

For the moment, however, let us recall our obvious duties—to prevent ill-health, to diagnose illness at the earliest possible moment, to treat it effectively and prevent, if possible, recurrence, and in the last resort, to save suffering for the mortally afflicted.

Of prevention, straight away it can be said that it is in truth largely beyond the control of doctors as we know them to-day.

What a man is, was in part determined before he was conceived at all—by the genes of his parents, of his grandparents, and so on, perhaps, in fantasy, back to the genes of that first living protoplasm cast upon the shores of a world æons old.

It was determined in his mother's womb, at the time of his emergence therefrom, by his earliest dependent years, by his food, his clothing, and his shelter. It was determined by his surroundings in youth, his home life, his schooldays, the climate of his country, and, later, by his occupation and his way of life.

I have tried to encompass in a few words, the field of preventive medicine as it really is. It is a vast territory, and bristles with keep out, trespassers prosecuted, and private property notices.

Yet the medical profession is glibly blamed for doing little to prevent ill-health, and taking little interest in prevention.

Let us, however, survey this property, and estimate its possibilities for development.

In the matter of heredity, the scope is still limited. True, the fruit fly or the garden pea can be mated so that the colours, patterns, and qualities of the offspring can be forecast and attained to order. Mice can be bred immune to cancer, or liable to it, but the span of life of those fauna and flora is so short that many generations of these come and go in the lifetime of a man, and so this solves few of the problems of the living.

Eugenists feel that by picking and choosing, they could breed physically perfect men and women, but even were we to submit to this abnegation of freedom, far too little is known of human genetics to guarantee perfection; besides, some surprising results are obtained from most unpromising material.

Nevertheless, enough is known of a few conditions transmitted through the parents, to justify a ban on their breeding, thereby saving misery to both the unhappy offspring and the parents.

Clearly, there is a place for the teaching of genetics in the medical curriculum, denied to it at present.

Of even greater importance is the freedom accorded to parents infected by venereal diseases, to reproduce at will. These are among the few conditions which can be conveyed from mother to child. Happily, often the fœtus does not attain separate life, but when it does, there is the tragedy of a new life marred, disfigured, perhaps blinded.

Surely man's freedom cannot entitle him to condemn his progeny knowingly to a heritage of disease—or to transmit to another such a scourge.

Compulsory medical examination for all contemplating marriage should be the rule, and restraint of the infected until rendered non-infective. This would not entirely eliminate congenital infection; by education, men and women would have to be taught the duty they owe to their children.

We know all too little of that period lived in intense privacy by embryonic man in utero. He lives as a parasite on the mother host, and must depend for well-being, to a great extent, on her. Only by regular examination during pregnancy can the welfare of both be insured, and then only if this be conducted by trained and experienced observers. Clearly, this should be the prerogative of the obstetrician, whose duty it will be to conduct the new member to his seat amongst his peers.

Mr. Macafee, my predecessor in this address, postulated with great authority that the time must come when only those with specialised post-graduate training would preside at this function. This is a view I endorse entirely, and presume it would include post-natal care.

As a natural corollary, since obstetrics would be outside the work of the general practitioner, the curriculum would be relieved of this part of training, and more time given for other subjects.

It remains true that what the geneticists call "sports" and what you and I call monsters, and feeble, deformed, and imbecile children will still be born, but if every mother were ensured of the care of doctors of the calibre of my colleagues whose province this is, there would be a notable reduction in these tragedies.

The implementing of the Beveridge scheme should further ensure that want and semi-starvation will never again afflict the mothers of our race—it will not, however, make all women worthy to bear children: education must play its part, and this process, like the mills of God, will grind exceeding slow.

There is extant the pathetic belief that a mother's care of her child is an instinctive matter, but this is by no means so. Not long ago, I was asked to deal with a hernia in a three-months-old child, the product of a multiparous woman in comfortable circumstances. Struck by the emaciated and miserable appearance of this infant, I made inquiries, and found that it was getting the ration of a patent infant food intended for a three-weeks-old child. A clerical error on the mother's part, no doubt, but a warning that trained supervision is essential for these vital months in the life of the infant.

No civilised people should endure the spectacle of children born into homes and destined to live in the company of tuberculous, drunken, cruel, or criminal parents. We cannot tolerate this in a world crying out for children fit to build a better world.

Accommodation must be provided for every victim of tuberculosis in an infective stage, and compulsion must be applied so that no child whose birthright is health and happiness, shall lack these because of parental evil or misfortune.

The burden of a mother with a family to care for is no easy one. Sometimes she must work to augment her income, sometimes she falls ill, and at all times

she needs relaxation to escape from maternal cares. To meet these needs and free her from anxiety, crèches and nursery schools are imperative to an extent unknown in this country to-day.

Food, clothing, and shelter have loomed so large in public utterances and planning for the future, that we may accept it as certainty that none, save through their own fault, shall lack the means of securing these elemental needs of decent living.

Even then, much will remain to be done—not alone by teaching the people how to live decently, but what to eat and why, and also how to prepare and cook food to the best advantage—an art in which we in this country lag far behind many of our continental neighbours. Much more stringent control will have to be exercised, so that all food sold shall be safe and clean, and be what it purports to be.

It is a national disgrace that milk—that most valuable of all foods for the young, should ever be the source of tubercle or other illness.

The total of illness arising from food deficiencies and unsafe food must be enormous, and all of it is preventable.

Apart from the intolerable spectacle of the shivering, ragged, and unshod, which can be attributed to poverty, clothing is dictated by fashion, and, on the whole, in these days this tends to evolve on sensible lines, although the male lags behind the female in this respect, being less exhibitionist, a strange contrast to his counterparts in the rest of the animal kingdom.

I can give no figures of the cost to the nation in diseased body and mind, of bad housing conditions, because it has never been computed; but every doctor who visits the homes of the people knows it is very great. The destruction of war has forced upon us rebuilding on an immense scale. It is for us, the guardians of the people's health in name at least, to see that damp, vermin-ridden, overcrowded dwellings shall never again house human beings, and that access to sunlight and air and open spaces, facilities for cleanliness, freedom from smoke and noise, and safe playgrounds for the children, shall be the natural accompaniment of all future housing.

Juvenile crime is a bugbear to the whole community—it is ascribed to poverty, parents, and pictures, but to my mind, education, or rather miseducation, must be held largely responsible. We can overcome poverty to a great extent, and incompetent parents to some extent, but education can be remoulded entirely. I have not time to expand on this enormous subject, save to say that until good citizenship, a knowledge of life as it is lived, and the development of innate talent and ability in each individual, is the aim of our educationists, we shall not get the citizens we deserve. Nor must there be any gap of idleness between school and work, the natural right and privilege of every man and woman.

Crime and anti-social behaviour at all ages are as much a menace to our social structure as zymotic disease, which almost alone has been treated preventively by our profession in realistic fashion. That this is so is because plague, smallpox, typhus, and so on, have been visible, tangible threats to every human being, menacing all, whether they lived in castle or in hovel. Fear brought forth the

antidote, and so was born a public health service. We must deal with crime as with any other disease, by exterminating or counteracting the germs which give rise to it. Our profession has been painfully deficient in these rôles, and it is for us to see that sufficient psychiatrists are trained, who can be trusted to ferret out the root causes of these human deficiencies, and advise how they shall be eradicated.

It is no less important that every individual be trained and established in that occupation in life to which he or she is best adapted. The square peg in the round hole is responsible for an appreciable part of the ills with which we have to contend, and is the basis of many neuroses. We must co-operate with schools and universities, so that such misfits are eliminated.

Climate has, undoubtedly, a considerable bearing on health. In our own country, damp and lack of sunlight are malefactors of great potency—rheumatism and the common cold, to name two alone of the minor ills, although major in their cumulative effect, depend to a great extent on these agents. We cannot control climatic conditions as yet, but we can counteract them to some extent; by good housing in the one case, and by increasing the use of ultra-violet light in the other, since there is considerable evidence that this minimises the liability to colds. The latter was believed to pay in the Maginot Line of ill repute, and it should repay a hundredfold in the domiciles of peace.

Industrial life furnishes us with a considerable proportion of our work—accidents and occupational diseases. Both employers and employed are responsible, because of evasion of responsibilities on the one hand, and ignoring of precautions on the other.

The great evil is the system whereby the injured are compensated by capital sums or paid for idleness following injury, and this is true for all injuries, instead of by restoration to full work or to alternative gainful occupation. It is humane and proper that none shall know want or destitution for themselves or their families as a result of mishap or accident, but the present system encourages the disabled to cherish their disability as a capital asset, or a source of unearned income. Doctors are briefed by one or other party to the claim, to the detriment of their scientific impartiality. The courts of law encroach upon hours which they can ill spare from their patients.

Assuredly, the assumption that all injured must be anxious and willing to resume their rightful place in a world at work, is the only one in keeping with human dignity. To this end, and to this alone, should doctors be employed, to ensure that from the time of the accident to maximum recovery, the injured should be under control directed to this end—it may be full, it may be partial recovery. In either case, their future must be safeguarded : in the latter case, by employment suitable for their disability. This can and must be achieved by rehabilitation centres. Thus, and thus alone, shall we eliminate the degrading degeneration in morale that follows injury, whilst at the same time stilling the natural anxiety for the future that besets the injured.

Of man's way of life, assuming he has the wherewithal to endow him with his needs, I can only say that education is the lighted path—not propaganda by cranks

and faddists, but by scientists inspired by knowledge and endowed with the faculty of expounding it. The schools, the press, the wireless are theirs, and it is our professional duty to see that they are used.

The extent to which the public resort to patent medicines and charlatans is a reproach to education, and a grave danger to health, not because these remedies in themselves are often harmful, but because effective treatment of serious maladies is often delayed by their use.

We are handicapped as a profession in making an attack on proprietary medicines, since the obvious, but untrue, plea is used, that we are jealous of their rivalry, and also, because their power over the press is enormous, by reason of the vast sums they spend on advertising.

The simple and scientific answer is that treatment without diagnosis and supervision is criminally dangerous to the health of the community, and we must see that the present malign influence of quacks and patent medicines is transposed into useful and worthy channels.

In prevention, these are some of the ways in which you can influence the well-being of your fellow-citizens, but are we equipped for this Herculean task, this cleansing of the Augean stables? I beg to doubt it.

For the moment, however, let us consider our other duties—the early diagnosis and effective treatment of disease, the prevention of its recurrence.

In the first of these we have three factors—the disease, the patient, and the doctor.

Many diseases are so insidious in onset that they have advanced appreciably before they cause recognisable disturbances in the human frame. For a time these are so trivial that the patient disregards them, or tries various remedies, self-fancied or recommended by friends, or indeed, by anyone who is not a doctor—too often he is the last resort. The cult of magic and the witch-doctor still lingers on. Then there is the fear of the truth that something serious is wrong—the hope against hope that the worst will not happen. Even then, so complex is the human body, so obscure the signs, that the physician himself may be at a loss.

It is not easy to find the happy means of education of the lay public, to warn without alarming, or without creating a body of hypochondriacs, but sensible propaganda can do much.

Once, however, our advice is sought, let us recognise that no single individual is endowed with omniscience : that medicine in the sense of the care of the human body and mind is far beyond the powers of any single creature. Only by the closest team-work of experts in its various branches, can elucidation of the problems of ill-health be found. Even when the malady is run to earth and checked, we must seek out the causes and prevent recurrence. In a word, care is not enough. We must follow up our patients, wherever they go, whatever becomes of them.

Only in this way can we learn the efficacy of treatment, the trend of disease, and the hopes of prevention. Added to this is the necessity for providing change of occupation or climate when conditions demand it. Whatever is needful must be

accessible to all. There are few, however crippled, deformed, or disabled, for whom useful work cannot be found.

There will always remain the incurables and the aged. We lack for them not the means of succour, but the accommodation. It is a glorious tribute to human altruism that, on the whole, these have been tenderly cared for by their relatives, but they are an insufferable burden for the younger economically active generation.

We need for them, not so-called charitable institutions, with all the stigma, and often horror, attached to this name, but homes where they—particularly the aged —may live self-respecting lives and enjoy a freedom of activity within their capacities, and, of course, provision for medical care.

Even death itself is not an end; again and again we in our profession can learn from it lessons of infinite value to the living, but are handicapped by the repugnance existing to post-mortem examination. Surely we can hope that education may overcome this resistance, based not on true religion, but on a complete disregard of the facts of disintegration in the grave. Here, too, our voices should be raised in favour of cremation in lieu of the accepted, but insanitary, burial of the dead.

I have asked the question: Are we fitted for the tasks before us? I am certain that we are not, within the framework of the present.

We must start by selecting candidates for a medical career with especial care, so that only those with aptitude and enthusiasm are chosen. We need the very best for our task. Too often now it is a parental desire, rather than an inborn urge in the individual, that determines the taking up of medicine as a career.

Assuming that school education will make progress in turning out better citizens, the medical curriculum too needs overhauling—the elimination of much that is dead wood in relation to its purpose, the excision of much unnecessary academic detail, earlier contact with the human material, better correlation of the separate sciences, closer touch with the realities of ill-health and its background and the surroundings of our patients.

I do not wish to belittle the importance of the ancillary sciences. No branch of science and no aspect of culture is without its value to medical practice. Cosmic rays may be the handmaiden of some therapeutist to-morrow, or even the mould growing on an ancient boot, the paramount weapon against some infective agent.

Yet I have never, in my own practice, nor in observation of that of my colleagues, seen the technical application of the inflorescence of the rosebud or of the delicate arrangements of the entrails of the cockroach.

The capacity of the storehouses of memory is limited; let us then not cram them from year to year with contents that perish after one season, and if remembered at all in after years, it is with distaste, wholly unworthy of the intrinsic beauty and fascination of those sciences themselves. Rather let there be a hard central core of knowledge of the evolution and development of man, and of his reaction to his surroundings, leaving space for each student to develop his own culture and special interest.

In this way the present undergraduate course might be shortened, and two post-graduate years devoted to hospital experience before the doctor would be allowed

to practise independently. In the second of these years the budding physician should have opportunities for seeing how outside general practice is conducted, accompanying qualified doctors on their visits. After that, if specialisation is decided upon, at least four or five more years would be spent in acquiring an all-round knowledge of general medicine or surgery, and also of anatomy, physiology, pathology, etc. The last year or year and a half of these would be devoted to the special subject chosen. Of course, I assume that there will be a graduated scale of salaries for those undergoing training, but much more intensive training there must be if we are to provide an adequate medical service for the nation.

The Battle of Britain was won not by heroes, but by airmen trained to the highest pitch for their task. Great heroes they were, but heroism alone would have availed them and us little.

As to the training grounds, I am convinced that there must be in the future a great expansion in hospitals or clinics—what they are called matters little. They will have to be centred so that each serves perhaps a quarter of a million people; each will have its own special departments, and specialisation must inevitably increase.

We have accepted, without demur, specialists in diseases of the eye alone, a cubic inch of human anatomy, and thus I foresee that each such hospital will have units allocated to special regions or pathological conditions—cardio-vascular, neurological, gastro-enterological, and so on, each with its team of workers. These hospitals will be the workshops and the offices of general practitioners and specialists alike working in harmony and collaboration.

Obviously, in a region such as Northern Ireland, with its limited population, certain highly specialised departments, for example radio-therapy, brain surgery, thyroid diseases, would be centralised in the university centre, but whilst each main hospital would have its own independence, staffing would be interchangeable according to needs. Linked with them would be the hospitals of smaller areas, towns and rural districts, staffed to deal with emergencies of all kinds, and minor conditions, but they again would be the foci from which all medical practice would be conducted. They would have their mobile units for all contingencies, and the services of the larger clinics when required. Essentially, all medical appointments would be in the hands of the practising profession, and so immune from lay interference and political influence, merit and character alone being recognised.

As a corollary, doctors would live lives and enjoy amenities such as are accorded to other citizens, rather than endure, as most do, the ceaseless toil, the never-ending watch, and homes that are public thoroughfares.

Time marches on, and I must draw to a close, leaving much detail to the imagination, but in conclusion I would say that we of the medical profession, and allied sciences, and I mean the active practitioners of these, alone are competent to judge, and capable of assessing the needs of our fellow-men in matters of health. If we ourselves are as efficient as we ought to be, inspired as we must be by a love of humanity, then without question it is our right and our duty to advise the State, and to demand its co-operation to this end.

Some Post-War Psychological Problems

By J. F. WILDE, M.D., D.P.M., Major, R.A.M.C.

THERE is a great deal of discussion and speculation to-day about post-war conditions, and especially about the future of our own profession. Post-war planning and reconstruction, the re-moulding of our spitfires and hurricanes back into pots and pans, the return of our fighting men from the adventures and excitements of war to the steady pursuits of peace, present us with problems which we will all have to face. Psychiatrists, as students of behaviour, are, of course, particularly interested in the human side of the problem. Their experience in dealing with large numbers of men in the Services during the war, ought to be of some assistance to us all in facing problems of behaviour after the war. It may, therefore, be of interest to describe in the briefest outline what the psychiatric experience in the Service *so far* has been, and what lessons can be learnt from it.

Our greatest psychological heritage from the last war was the 1922 Report of the War Office Committee on "Shell Shock." This not only laid great emphasis on the need for better recruitment and proper selection of personnel, but also stressed the importance of morale in preventing neurotic breakdown.

In the first number of the *British Medical Journal* for this year, Brigadier Rees, the army consultant in psychiatry, produced a most comprehensive article on "Three Years of Army Psychiatry in the United Kingdom." It contained an interesting table showing how the psychiatric service is organised (see table on page 96). A glance at it shows the importance attached to psychiatry. There is now a special directorate of army psychiatry. The director, however, is not himself a psychiatrist. On the contrary, he is a regular hygiene officer, i.e., an expert on preventive as opposed to therapeutic medicine. The psychiatric service is essentially a prophylactic one. As in the case of typhoid or diphtheria, prevention is easier, cheaper, and more effective than treatment. It will be seen from this table too what a close liaison exists between psychiatry and selection of personnel (S.P. for short). Before the war, psychiatrists at times made use of *Vocational Guidance* in judging the aptitudes of problem children, so as to place them in careers to which they could best adapt themselves. Similarly, the Institute of Industrial Psychology was employed by certain enlightened firms to obtain workers best suited to the jobs they had to offer. All this accumulated experience has been incorporated into S.P. A job analysis of the many tasks in different arms of the Service was carried out by S.P., and this is the basis for posting men correctly in the arm to which each is best suited.

One of the first considerations in building up sound morale is to have sound leadership. Therefore, great importance is attached now to the selection of officers. Candidates come before a War Office Selection Board. They live with the members of this Board for three days, and are under continuous observation at both work and play. Their intelligence and emotional reactions are examined. It is not enough to be clever, one must also have "guts," character, combative temperament,

and, most of all, capacity for leadership. Each candidate, irrespective of his political or social background, undergoes numerous comprehensive tests. It is a searching examination, but not an ordeal, and it is noteworthy how many unsuccessful candidates remark afterwards that they feel they have had a square deal.

In building up the morale of the other ranks, it is most important to give each man a conviction of his own worth and power and competence, to make him feel that he is really essential in the Service, and not merely a number or name. This is best achieved by posting, in so far as is possible, the right man in the right job, and if by chance mistakes in the posting have been made, having machinery for their urgent rectification. All recruits are now sent in the first place to special training centres for six weeks. There they are under military observation, and are tested for their intelligence and for any special aptitudes. It is as a result of these tests and observations that they are then posted to their units. Sound morale is created and preserved by having each soldier in the job to which he is naturally best adapted, and having him well trained and well led.

Before this Primary Training Centre scheme was introduced, numbers of psychotics and borderline defectives were recruited by mistake. It is not possible for anyone, even a skilled psychiatrist, to estimate the recruit's mental make-up in the short time available for medical examination on enlistment. Psychotics and borderline defectives are quite capable of putting on an act or simulating normality for twenty-four hours, to suit their own purpose. In the past, they have thus got into the Service, often with the object of claiming a pension later. The new scheme of six weeks trial under observation and special testing now rules this out.

Psychiatry and personal selection have also had a share in the organisation of battle-drill and battle-inoculation. These are the methods for conditioning soldiers to the sounds and sights of battle as a means of preventing nervous breakdown. I worked with McLoughlin and Millar when they carried out their early experiments in conditioning men to the horrors of dive-bombing. The apparatus was at first somewhat crude. The patient relaxed on a bed in a darkened room. A model dive-bomber was suspended over his head, and raised and lowered by a string over a pulley, and the appropriate sound-effects were produced by violent kicks on a tin bath under the bed. However, conditions have been made more realistic since then, to enable our soldiers to acquire the necessary confidence before facing real fighting.

Thus personal selection and psychiatry have been co-operating closely to carry out the recommendations of the 1922 Report on "Shell Shock," namely in (1) better recruiting, (2) selection of personnel, and (3) in the creation and preservation of sound morale.

If, however, in spite of all this prophylaxis, psychiatric casualties do occur, they are segregated in military psychiatric hospitals (the tiny things in the bottom right-hand corner of the table). The psychotics and borderline defectives are got rid of. The neurotics we treat, and for the most part retain in the Service. In treatment, we employ all forms of modern psychotherapy, but the most valuable

adjunct to all these forms of treatment is occupation therapy. By O.T. I do not mean handicrafts merely to while away time in hospital, but properly prescribed purposeful activity, to enable the patient to regain his sense of achievement and value to the community. By it the chronic *self-pity* of the neurotic can be transformed into self-respect. E.g., a W.O. (II), holding a key position in a technical corps, developed a chronic anxiety state. He could not concentrate on his work, and furthermore, seemed incapable of delegating his duties. He had long service, and feared being discharged from the army before qualifying for a full pension. In addition to psychotherapy, during which he was found to be a very vain fellow needing deflation, he was put on simple woodwork. This he hated, because he was hopeless with his hands, and showed up badly in comparison with many younger soldiers. However, he had to carry on with his prescribed treatment, and gradually he developed a sense of manual achievement, which helped to restore his self-respect. Also the manual work exercised a different part of his overwrought brain. After he left hospital and returned to his work, he was promoted to W.O. (I). Occupation therapy includes gardening, keeping of live stock, woodwork, leatherwork, metalwork, basketwork, weaving, etc. These are made use of to gain therapeutic results, not as an end in themselves.

Further, in the psychiatric hospitals we have the privilege of recommending for immediate transfer, directly through the War Office, neurotics whose main trouble seems to be that they have failed to adjust themselves in the arm to which they were first posted. How many patients do we see in civil life who are suffering in much the same way—they are often labelled anxiety neurosis, but the main fact in their lives is that they are unhappy in the job they have chosen or into which they have drifted. Take, for example, school teaching. How many brilliant students at the end of their examinations find they have no set purpose in life, and then drift into teaching as the only means of making a living. They then become chronically disappointed characters and cynics, and they are the people to whom our children, during their most susceptible years, are entrusted for their education. Proper selection could prevent this. A great piece of scientific field-work is now being carried out by S.P. and the psychiatric service under proper experimental conditions. Thousands of men are first being submitted to tests, and then placed in selected situations, and a proper follow-up is being carried out as to whether they succeed or fail. In the same way, we carry out a follow-up of those neurotics specially recommended for transfer through our psychiatric hospitals. We are thus accumulating very valuable data on which to base post-war vocational guidance on a grand scale. Everything is going to be much more democratic after the war, incomes will be much more on a level. A great deal more efficiency and happiness will be secured by having men and women in the jobs to which each is best suited, and this will be the greatest prophylactic against nervous breakdown.

It is interesting to speculate on vocational guidance after the war. Perhaps intelligence tests will decide whether a child will be fit for a secondary education or not. Those who fail may become the hewers of wood and drawers of water. Perhaps there will be tests of character as to suitability for professional training.

The temperamentally unstable will become artists, the obsessionals financiers, and so on.

One fact that has been brought home to us perhaps more than any other during this war, is the bad effect that idleness or boredom has on morale. This is not only true of the British Army, but also of the German and French Armies. What a brilliant strategic stroke of Hitler's it was to cause the morale of the French Army to rot in idleness. There was an article published in the *Deutsche Militararzt* by a German R.M.O. called Bernsdorf, in June last, on "Vegetative Neuropathies in Relation to Military Medicine." In this he states: "These neurotic conditions occur not when there is active warfare going on, but during the quiet intervals, when family troubles and friction with superiors or fellow-soldiers bulk large in the men's minds." This statement was based on his experience of active warfare in the battle of France, and later, his static experience with German troops occupying the Balkans.

As for our own men, I am not giving away any military secret when I tell you that the incidence of neurosis amongst soldiers in comparative safety at stations such as Northern Ireland, is higher than in really active theatres of war, where the men are exposed to all the hazards of the campaign. Of course, endeavours are made to keep them amused by E.N.S.A., etc., but that is all passive rather than active and creative occupation.

The dangers of idleness and boredom should have been obvious to us all before the war. Those of us who have had experience of the depressed areas, with their millions of unemployed and thousands of permanently unemployed, knew the depths to which morale could sink. The hopeless feeling of uselessness in the hearts of thousands of able-bodied but under-nourished men, made them a good breeding-ground for all sorts of revolutionary ideas. The amazing thing was how so many stood up under such dire conditions for so long. Sir John Orr has said somewhere that perhaps it was under-nourishment that prevented a revolution. Men with very little in their stomachs have little stomach for fighting. If the Beveridge Plan gives us food without creative occupation, the stage is set for revolution. The terrible shocks of mass air-raids on our large towns are nothing compared to the long-drawn-out misery of unemployment and its attendant under-nutrition. There is plenty of clinical evidence to support this statement, apart from contemporary newspaper reports. I might refer particularly to the recent book published in America, entitled *The Psychological Effect of War on Citizen and Soldier,* by Wing-Commander R. D. Gillespie, Psychiatrist to Guy's Hospital, one which serves one of the worst-bombed areas in England.

We all remember in the few years that preceded this war, how many people there were who had 'jitters' in the war of nerves. The Central Powers were doing all they could to make the world unsafe for democracy. Our Government was appeasing them, and we dare not express our true sentiments, even in our own newspapers, for fear of offending them. We were bound and gagged, as it were. We went from crisis to crisis, and trade was at a standstill through lack of confidence. The declaration of war then brought a definite feeling of relief to many

whose nerves were all on edge. They felt at last that they could give outlet to their long pent-up emotions in actual fighting. It is an interesting clinical fact that the suicide-rate in all belligerent countries drops sharply during war. If manic-depressive insanity can be regarded as a disordered function of the aggressive instinct, then in melancholia the aggression is turned in on the patient himself, whereas in mania it is directed outwards. In war there is plenty of outlet for aggressive instincts, either in fact or fancy. We must see to it that peace must also have its normal outlet for aggression. "Peace hath her victories no less renowned than war."

One of the most interesting, if tragic, phenomena of the last decade is the manner in which Hitler managed to dupe the whole German people to rally behind him and support his crazy schemes. Speaking generally, the average German is a hard-headed, well-educated, painstaking, calculating materialist, not easily carried away by every wind of doctrine. That is what makes him such a formidable enemy. There were many more attractive men than Hitler in Germany who tried at different times to head revolts against the Weimar Republic, but they all failed. How then did success come to a pudding-faced Austrian with a Charlie Chaplin moustache? It is a phenomenon worthy of the closest study. I think it is possible that *one* of the chief factors making for Hitler's success was the mass unemployment that occurred in Germany from 1929 onwards. The number of able-bodied young men with nothing to do became delinquents and gangsters. The elderly honest folk were truly frightened of them, and it was easy for Hitler to raise the bogey of communism, and thus harness all these gangsters to the caterpillars of his Nazi panzers. He relieved unemployment at once by getting these Nibelung hordes to work on rearmament. By dressing his gangsters in uniforms, and thus giving them a semblance of Teutonic respectability, he was able to induce millions of Germans to revert to the regimentation and Prussian militarism which only a few years earlier had plunged the world into untold misery.

We are all possessed of instinctive aggression, and that energy must find an outlet, either creative or destructive. Theologians talk of original sin, meaning, I suppose, that if our potential energy does not direct itself into useful channels, it is bound to find an outlet in what they call evil. An internal combustion engine can be employed usefully in a tractor to produce crops, or destructively in a bomber to exterminate folk. An interesting example is close at hand. Ireland, the land of saints and scholars, is also the distressful country always in trouble. The trouble is that the country is too small to support all the able-bodied men that are born in it. The eldest son gets the property, the second becomes a padre, and the third a doctor, or vice versa, but the fourth, fifth, and sixth sons are born to be out of work. If they can emigrate, they do splendidly abroad as soldiers and statesmen and pioneers of all kinds, but if they have to stay at home, condemned to idleness and boredom, their energy may be exploited into destructiveness by any enterprising agitator. Thousands of aggressive Irish are to-day fighting for the United Nations. After all, this is not a private fight. Anybody can join in.

To-day we hear statesmen say of various parts of the Beveridge Plan: "We

cannot afford *this* or *that* after the war." There is certainly one thing we cannot afford, and that is unemployment. Boredom is much too costly. If we are fully alive to the danger of having a mass of human energy without creative outlet, we ought to be able to take steps to see that it is properly used. In other words, we need occupation therapy for our citizens on a grand scale. Occupation therapy is not designed to be self-supporting. In actual practice, however, it often is, altogether apart from therapeutic return. (*Cf.* motor-roads in Libya and in Germany.)

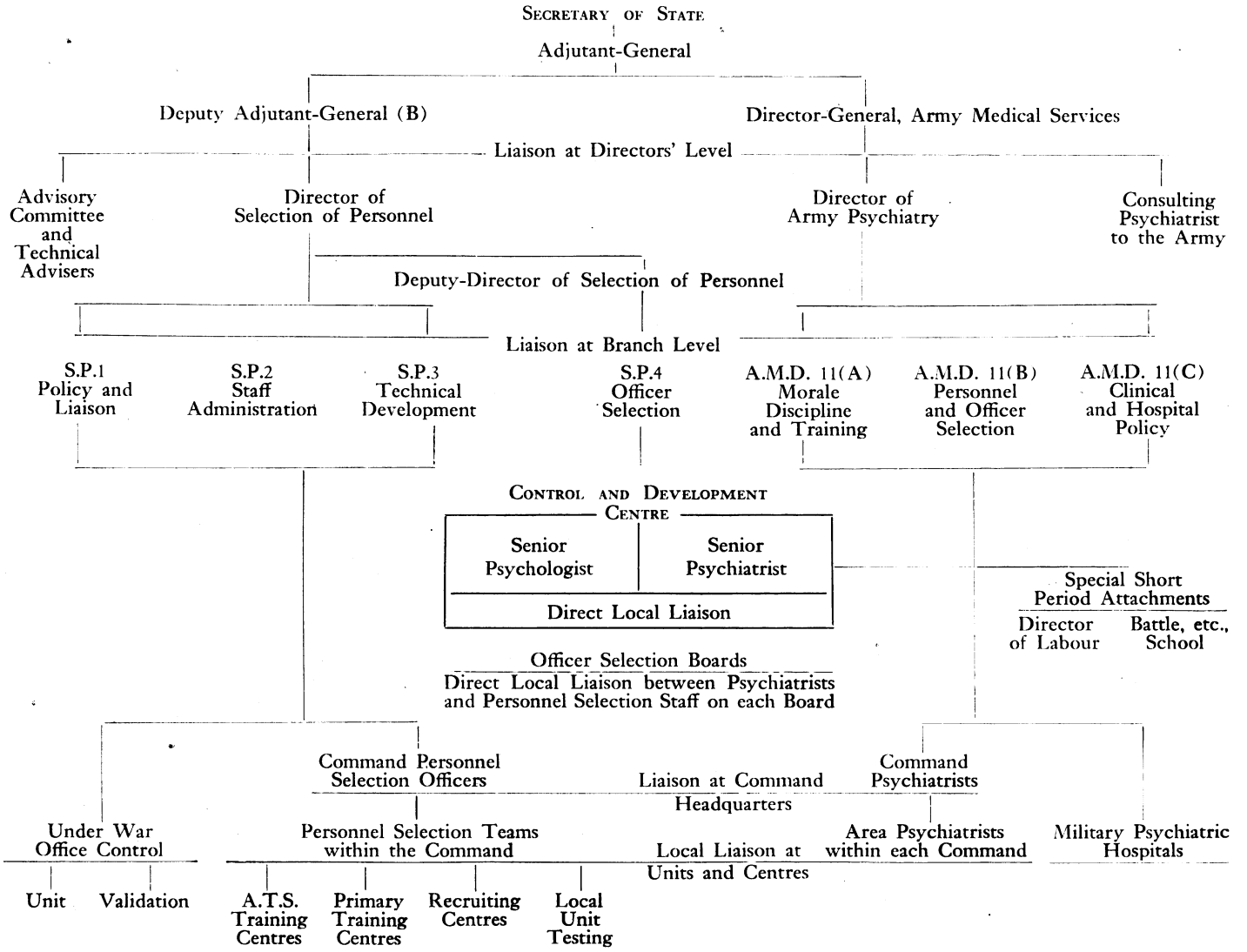
Another problem that psychiatrists have to face in the army of to-day is, that a great many soldiers are so individualistic that they cannot settle down to the community life of the Service. Those who have lived uneventful lives in the security of their homes find it very difficult to adjust themselves to the lack of privacy and rough-and-tumble of the barrack-room. With little education and poor social sense, they do not readily appreciate how necessary it is for them to make their individual comfort secondary to the welfare of the community as a whole, and how the two are so inter-dependent. This lack of community-sense is often very noticeable amongst newly-joined medical officers. In the rush of war it is not possible to give them all adequate military training, and I suppose ours is one of the more liberal professions, and we tend to have a high proportion of individualists. Sometimes these individualists react very oddly at first to the routine and red tape which is inseparable from any large organisation. You have all heard of the numerous army forms. Whether they are more numerous now than the ones used in civil life I am not in a position to say. At first, the typical individualist ridicules the army forms and tries to dodge them. After a while, however, he begins to see that these forms actually have some value and save *him* some work. Then his typical reaction is to devise new forms, or worse still, pro-formæ *for others to fill up*; and so he becomes a reactionary. It is well to restrain his enthusiasm then, because though I myself am fully alive to the value of army forms, I think one can have too much of a good thing. Such is the simple metamorphosis from an individualist to a reactionary.

Amongst my friends before the war, I included two colleagues who were very entertaining, most unconventional, and with political leanings markedly to the Left. They were often mildly amused at my conventionality in being a Territorial. They were individualists in the extreme. When the war came, they were drafted into the Service, and they became so enamoured of army forms and routine, and were doubtless so efficient, that they have been promoted to Colonels—typical Colonel Blimps. How is that to be explained? Well, some of you are Biblical scholars, and will recall the case of Saul of Tarsus, a pharisee of the pharisees, who went about kicking against the pricks and persecuting Christians even to the death. Then suddenly, he switched over to being one of the most bigoted and narrow-minded Christians the world has ever known. You are all familiar with Jung's two types of personality — extroverts and introverts. One is the open, frank, sociable nature, the other is shut in, pensive, self-sufficient, and solitary. Anyone may be possessed of both characteristics at once, but only one characteristic shows

itself, the other is dormant, like the obverse of a medal. The dormant characteristic remains hidden from view unless something of a startling nature occurs to bring it to the fore, such as a revolution. Perhaps this explains the conversion of St. Paul, or why a brilliant physicist like Sir Oliver Lodge should be overwhelmed by spiritualism, or why occasionally revered and staid city fathers are arraigned at the Old Bailey for fraud. But I need not elaborate this—dozens of examples will spring to your mind.

I hope I have not laboured this point too much, but there is bound to be a good deal more community life after the war than before, because of housing and food shortage, etc., and we will have to accommodate ourselves to it. We are all thinking just now about the future of medical practice, and whether we are going to be conscripted into national service. The medical and lay press contain many letters from doctors, expressing contrary views. These make interesting reading and display many individual complexes. On the one hand, you have those doctors who base everything on the importance of security and safety first, like France with her Maginot Line complex. On the other hand, you have those individualists who maintain that a doctor must be free to do more or less as he likes. They think that if we are regimented we will just do the bare minimum, and the public and profession will suffer accordingly. This fear is not very creditable to the individualists. The faults we hate most in others are the ones that we possess ourselves, but fail to recognise in ourselves. Is one to assume that these individualists arrange their lives so that the constant threat of insecurity makes them work hard for the benefit of their patients and the profession, and without that stimulus they would be bone lazy, just drawing their salaries and doing the minimum of work? That is not what has happened to individualists in the security of the Service in the past. There are two outstanding examples to the contrary. Leishman was an individual research worker, and yet he reached the highest rank in the A.M.S. as an administrator. Further, his work in the Service brought him to the tropics, in which his field of research lay. Not long ago I interviewed an officer patient who, when recounting his history, told me how he spent his early service in the ranks in Mauritius round about 1910. Before his tour there the sick-rate from tropical disease had been very high, but it was gradually lowered during his tour and afterwards, because of the research work and hygiene propaganda carried out by their very enthusiastic young R.M.O., Lieutenant MacArthur. Many of us here have since met that individualistic R.M.O. as Lieutenant-General Sir William MacArthur, K.C.B., D.S.O., O.B.E., and know of his pioneer work on cysticercosis.

Thus individualistic doctors need not be alarmed about conscription into a medical civil service. There is plenty of scope for individualism in public service, and the cream will always rise to the top. Once the big change has taken place, the dormant qualities on the obverse of the medal will come to the rescue and enable individuals to become enthusiastic about the community situation. Many of us are inclined to think little of those who, in life, play for safety and develop the civil service complex. But if after the war a state service comes, it will be so colossal


Secretary of State
Adjutant-General
Deputy Adjutant-General (B)
Director-General, Army Medical Services
Liaison at Directors' Level
Advisory Committee and Technical Advisers
Director of Selection of Personnel
Director of Army Psychiatry
Consulting Psychiatrist to the Army
Deputy-Director of Selection of Personnel
Liaison at Branch Level
S.P.1 Policy and Liaison
S.P.2 Staff Administration
S.P.3 Technical Development
S.P.4 Officer Selection
A.M.D. 11(A) Morale Discipline and Training
A.M.D. 11(B) Personnel and Officer Selection
A.M.D. 11(C) Clinical and Hospital Policy
Control and Development Centre
Senior Psychologist
Senior Psychiatrist
Direct Local Liaison
Special Short Period Attachments
Director of Labour
Battle, etc., School
Officer Selection Boards
Direct Local Liaison between Psychiatrists and Personnel Selection Staff on each Board
Command Personnel Selection Officers
Liaison at Command Headquarters
Command Psychiatrists
Under War Office Control
Personnel Selection Teams within the Command
Local Liaison at Units and Centres
Area Psychiatrists within each Command
Military Psychiatric Hospitals
Unit
Validation
A.T.S. Training Centres
Primary Training Centres
Recruiting Centres
Local Unit Testing

that we will be grateful for all those thousands of safety-first doctors ready to carry out all essential prophylactic routine. Even research to-day cannot be left to individualists alone. It needs an army of specially trained chemists, physicists, and biologists to work in teams under suitable directors, carrying out thousands of experiments and controls that are to-day essential. But if there are still some extreme individualists who cannot cope with community life, I suppose they will all have to be invalided out, and get their "ticket" from the Service. No doubt, the benevolent Sir William Beveridge will not have neglected to make some provision for them, but even if he has not, there will always be plenty of people left who prefer to pay for a private doctor. Vocational guidance may, of course, in the first instance send such people into an academic career, rather than into public or private practice.

Finally, turning to the bottom right-hand corner of the table, what have we learnt from the military psychiatric hospitals? The neuroses treated there are the same as those treated in civil life. In peace-time these are treated as hospital out-patients. In the Service they have had to be in-patients, and we have had more control over their lives. The results have been so gratifying that we may be led to advocate more in-patient treatment for neurotics after the war. Before doing that, however, we will need to dispel the awful stigma that now surrounds any hospital treating nervous or mental cases. Why should there be this stigma, and why should cases of nervous or mental disease be objects of ridicule? Doctors themselves are often the worst offenders in this respect. We do not point the finger of scorn at a typhoid patient, even though we know that he has been eating excreta in one form or another. The nervous patient is usually much less to blame for his illness. This regrettable stigma prevents patients coming early for treatment, when they are more readily cured. At some time or another each one of us, whether in special practice or not, is faced with the disposal of a psychotic or neurotic case. We all know how tragic such cases can be, and how relatives, because of the stupid stigma, will do everything they can to prevent the patient going to the proper hospital and having the only appropriate treatment. It is up to the doctors, by their constant and subtle propaganda, to break down this superstition and stigma, so that we can deal with our psychological cases more adequately after the war.

(N.B.—The views expressed are those of the author, and not official.)

The Psychological Approach to Medicine

By H. A. Thorner, PH.D., M.D., L.R.C.P. & S.(ED.), Major, R.A.M.C.

A DISCUSSION of psychological medicine before a medical but non-psychiatric audience best starts with a differentiation of methods and aims of psychological medicine from those of general medicine and surgery. If one speaks of a diagnosis in general medicine, one means a certain pathological or etiological entity, i.e. in speaking of diabetes mellitus one has a fair idea of the pathology and physiology of the disease even if one cannot decide if it is due to arterio-sclerosis, degenerative changes, or if an infection is the basis of the condition. Even in psychological medicine, or rather on the borderline of psychological medicine, we know conditions which we can diagnose with the same precision, and on the same principles. Take the case of G.P.I. In speaking of G.P.I., we may have a particular psychological picture in our minds, but we think in the first place of the pathological and etiological entity. As a psychological diagnosis it is a matter of the past, and anybody basing his diagnosis of G.P.I. on the psychological picture alone would make a grave mistake. It is a neurological and infective condition, which almost accidentally has psychological symptoms.

G.P.I. may or may not be an isolated case of an illness that has grown out of the limits of psychological medicine. Perhaps it is only the forerunner of other conditions which we shall one day understand in terms of physical pathology.

To-day there are fundamental differences between psychological and physical diagnoses. Adolf Meyer, of Johns Hopkins University, taught us to approach psychoses, and for this matter also psycho-neuroses, from an angle which is unknown in physical medicine. He encouraged us to look upon psychological illnesses not so much as illnesses, but as the reaction of an individual to his physical, biological, and social surroundings. He suggested that one should cease to talk about certain psychological illnesses, and suggested calling them reaction types. These types exist as much among the psychologically normal as among the psychologically sick. Under pathological exaggeration certain groups or types have become prominent. In so far as the psychoses are concerned, you, of course, know that I am referring to the two vast groups, the schizophrenic and manic-depressive reaction-types. An enormous amount of research has been done in biochemistry and pathology of patients of both of these types, but with remarkably little results. I do not say that there are no results at all. Not long ago Gjessing carried out promising research on the protein metabolism in catatonia, but it is too early to appreciate the real significance of these findings.

If you ask me why a certain person belongs to one reaction type and not to the other, I am afraid I cannot give you a satisfactory answer. I know how unsatisfactory it is to speak of "constitution," and we all hope that constitution will one day be defined in chemical and physical terms. At present we are still far away from this aim. It was the clinical acumen of Kretschmer,[1] which spotted a curious correlation of bodily build and certain psychological reaction-types. Kretschmer

describes several types of physique. They are not theoretical abstractions, but are real types whom all of us know from our own experience. One of these types is the shortish man, who is inclined to get stout as he grows older. He has soft features, his face is round, and his head is brachycephalic. At the other end of the scale there is the thin type with the narrow and long, almost bird-like face. His features are aristocratic but hard. Kretschmer calls the one the pyknic type, and the other the asthenic or leptosomatic type. Between them there is the bulk of mixed types. With the stout figure there goes a different temperament from that which is associated with the thin and aristocratic one.

The pyknic is a good-natured person, perhaps jovial and chatty, easy to approach, having a friendly word for everyone. He is inclined to be elated or may be given to depression. The thin person, or better in Kretschmer's terminology, the leptosomatic person, is aloof, unapproachable, reserved. His features are inscrutable, and seldom betray anything that may be going on behind them. He may be brilliant, but in his company one feels chilly. He seems to live in an airless atmosphere. These are the types which Shakespeare contrasts when he makes Caesar say to Antony :

> "Let me have men about me, that are fat,
> Sleek-headed men, and such as sleep o' nights :
> Yond Cassius has a lean and hungry look,
> He thinks too much, such men are dangerous."

Kretschmer, as you know, not only worked out the relationship between physique and character, but also related certain characters to the two great reaction-types which dominate the psychiatric field : the manic-depressive psychosis and schizophrenia. In other words, the pyknic individuals are more frequent among the manic-depressive reaction-types, and the asthenic individuals among the schizophrenic. Thus we have a division in pairs on three different levels :—

1. Manic-depressive and schizophrenic reaction-types.
2. Cycloid and schizoid temperaments.
3. Pyknic and asthenic physique.

Once having noticed this correlation, it seems incredible that physicians have not given it the attention it deserves. In itself, this discovery does not help us to get over the difficulty of constitution, but it has shown that the reaction-types coincide with certain physical factors, and we may hope that in the future we shall have the key to the mental and physical framework of the individual which we now call constitution.

There is no clear line of demarcation between mental illness and normality, and there is no clear division between psychosis and psychoneurosis. Recent psychological research has suggested that a state of mind comparable to a psychosis in the adult is a phase through which the normal child passes. Indeed, if you see children being frightened by bogies, of the dark or other things, you are inclined to think of the tale we hear from our psychotic patients. Of course, it is normal for a child to behave like this. A normal child has a different sense of reality from that of the adult, and we know that children grow out of this phase of hallucinatory experiences which we consider a common sign of a psychotic illness in the adult.

But there must be some line between the psychoneurotic and psychotic. This is found in two factors :—

(a) The relationship of the neurotic to his surroundings is nearer to reality than that of the psychotic. The neurotic knows what is real, and he can differentiate between his fear and real danger. He speaks of "imagination." This does not mean that his fears are less real. A person suffering from an anxiety neurosis can have terrible fears, and it will not help the patient if he tells himself, or if he is told that they are imaginary. Although he feels his fears strongly, he knows what is real and what is not real.

(b) A second and perhaps more important element of differentiation is the condition of the personality as a whole. A neurotic has an intact personality. He may have fears or hysterical symptoms, but his personality remains untouched. He feels love and hate for the people around him. The psychotic grows a stranger within his own family circle. He loses his ties, and becomes solitary, lonely, and more and more aloof. This description is more true with regard to the schizophrenic reaction-type than with the manic-depressive type. In the latter, changes in the personality are evident, but they are different according to the changed affect which is characteristic for this disease.

Within the circle of psychoneuroses there are three reaction-types which have been described under certain names: Conversion Hysteria, Anxiety State, Obsessional Neurosis.

The best-known of them is hysteria. It is also the best example of how the symptomatology of an illness may change. The classical picture as it was described by Charcot, who saw many cases in the Salpetrière in Paris, is nowadays not observed. Charcot described the typical "belle indifférence des hystériques" combined with a distinct hysterical fit. These fits were quite different from an epileptic fit : they had something purposeful. The patient would get up from her bed, make elaborate movements, bow several times, as if worshipping, and finally, with a great gesture, she would fall, or rather let herself fall, down on the floor, or would produce another more dramatic finale in the shape of the "arc de cercle." This form of hysteria is almost unknown to-day, and I only once remember having seen anything approaching it, and that was when an officious M.O. wanted to get a subject for his cine-camera. The hysteric obliged him with a perfect attack, and the results were, firstly, a row from our chief, who did not like the hysterical patients being provoked into symptoms; and secondly, a demonstration film for the neurological department.

At the end of the last century, hysteria was considered a disease which was strictly sex-bound, and when Freud returned from Paris, and demonstrated a male hysteric to the Vienna Medical Society, he provoked strong adverse criticism. As you know, the psychological approach by Freud and Breuer, who worked at that time together, was made by hypnosis, which was then very popular. Both of these workers were impressed when they first found a "psychic trauma" at the beginning of the disease. Their first theory was that hysteria was produced by a "psychic trauma." "It was not always a single experience which occasioned the symptom,

but usually several, perhaps many similar, repeated traumata co-operated to this effect."[2] But it was a great step forward in the psychological understanding of these cases when it became clear that often the trauma existed only in the patient's mind, that is, if one investigated the statement of the patient, one found that the facts were wholly or partially misrepresented. It is essential to make it clear that I do not suggest that hysterics make up a story for the doctor's benefit. This may happen occasionally, but it is most certainly not the rule. From these discoveries a new point of view was evolved, which may be called the "psychical reality." To put it in simple language: Our first consideration is the patient, and we are inclined to believe our patients, and do not pay much attention to factual reality. So far as the patient is concerned, it does not matter if an event really took place, so long as it took place in the mind of the patient. This does not mean that we speculate without any foundation. On the contrary, often we hear a story of cruel parents or other adverse conditions in childhood. When you meet the parents you recognise that there was no bad intention on the parents' side, and perhaps they behaved quite differently from what the patient describes. But does this alter the fact that in the patient's experience they were "bad" parents? Stressing the historical facts would miss the whole situation, because not the parents as they really exist, or appear to us as outsiders are important, but the parents as they appear to the child and patient. I avoid the word "imagination," as this term dilutes the immediacy of a feeling or of an experience.

Once having discovered that there was a "psychical reality," the next step was taken when Freud found that these patients were, without exception, emotionally quite different from what they appeared. The calmness and indifference which they displayed outside was a shield behind which emotions were running high. From this two concepts were developed: firstly, the instinctual basis for hysteria and the other psychoneuroses; secondly, the term of resistance and repression.

With regard to the instinctual background, or, to be more precise, the libidinal background, I will say only a few words, as it is not my intention in this lecture to give the evidence which forced us to assume that all psychological illnesses have a libidinal source. But it is clear that something has gone wrong with the instinctual, or libidinal equilibrium in psychoneurotics. The fact that psychoanalysis stresses the importance of the sexual instinct has stirred up a good deal of opposition, which, in my opinion, is due to a misunderstanding. The term of sexuality, when used in a psychoanalytic sense, has a much broader meaning than it has in the common language. Jung differed from Freud in the valuation of the sexual instinct. He used the term 'libido' in the sense of a general living instinct. By avoiding the controversial term of sexuality, he was able to get the truth farther abroad. Freud, too, in his later writings, used the term of 'life-instinct' as a broader term which included the sexual instinct.

For our purpose the term of repression is of greater importance, as it brings us into contact with the psychological mechanisms operative in producing and maintaining psychoneurosis. A mental event, such as a memory, an emotion or a desire,

may disappear from consciousness by a process which the layman calls 'forgetting.' The word 'forgetting' does not convey that this process is a positive action. We are in the habit of giving as an excuse for not having done or said something, that we had forgotten it, implying that we had the intention of performing the action, but that it had, as it were, dropped out of our conscious mind, and left us unaware of our original intention. It is as if we had lost a coin through a hole in a pocket of which we were not aware. But we psychoanalysts do not believe in the passive nature of forgetting, and therefore have refrained from making use of this word. Freud introduced another word with the intention of conveying that the process by which a mental picture, or mental event disappears from consciousness, is a positive action. Mental contents do not disappear from the conscious mind, but are 'pushed' out, and Freud calls this process 'repression.' Once a mental picture, or event, is repressed, it will not stay repressed unless the repressing force remains at work, which is then called resistance.

A psychoneurosis is impossible without repression, and it only originates if a situation arises that forces the individual to repress certain mental contents.

The psychoneurosis will disappear when the condition responsible for it has disappeared. This, however, does not mean that the change of an external situation can cure psychoneuroses. It is possible to remove a pathogenic situation by a change in external circumstances, such as by taking the patient out of his usual surroundings, sending a patient on a holiday, taking a boy out of school, and so on, and thus, by removing the "dangerous" external situation, the symptoms may disappear. But from a psychological point of view, the patient is not cured. The symptom is liable to return when the pathogenic situation recurs. But psychotherapy aims at changing the mental situation, so that the patient becomes able to tolerate the strain of events from which he escaped by means of his neurotic symptom.

If we are able to break into the world of the patient as it exists in his mind, and are able to change certain attitudes of mind by undoing repression, we can cure the patient, and the cure can produce immunity against a recurrence.

This will become clear if I introduce another term, "secondary gain." A patient is not psychologically ill without a reason and without a purpose, paradoxical as it may sound. The psychological symptom can, in a certain way, be understood as an attempt at self-cure. It is the reaction of the patient to a certain impasse for which the patient could not find a solution but the neurotic symptom. Listen to this case, which Freud described in one of his early papers[3] :—

"It is that of a young girl who was deeply attached to her father, who died a short time before, and in whose care she had shared. . . . When her older sister married, the girl grew to feel a peculiar sympathy for her new brother-in-law, which easily passed with her for family tenderness. This sister soon fell ill and died, while the patient and her mother were away. The absent ones were hastily recalled, without being told fully of the painful situation. As the girl stood by the bedside of her dead sister, for one short moment there surged up in her mind an idea, which might be framed in these words, 'Now he is free, and can marry me.'

We may be sure that this idea, which betrayed to her consciousness her intense love for her brother-in-law, of which she had not been conscious, was the next moment consigned to repression by her revolted feelings. The girl fell ill with severe hysterical symptoms, and, when I came to treat her case, it appeared that she had entirely forgotten that scene at her sister's bedside, and the unnatural, egoistic desire which had arisen in her."

Psychotherapy, as I understand it, does not treat a symptom, but an illness. If you try to take away the symptom (that is, the patient's solution for a difficult situation) without altering the mental situation, you will make the patient worse. It is commonly known that an obsessional patient who is prevented from carrying out his ritual, will have an acute attack of anxiety. On the other hand, as soon as the necessity for the symptom has disappeared the patient will drop it automatically. What is called secondary gain of the illness is the security or satisfaction which the patient gains from his illness and its symptoms : this is a daily experience of the psychiatrist who deals with these patients.

Here is the point at which I may halt for one moment to say a word about malingering. It has been my experience that malingering is of very rare occurrence in the army. The difference between malingering and neurosis is in practice not always easy to draw, but theoretically it can be said : Malingering is a consciously conceived deception, while a neurosis is a process outside the patient's volition. Indeed, it is very difficult to malinger successfully. I know of the case of a brilliant person who was a prisoner of war during the last war. By pretending to be a psychotic he managed to get a good deal of privileges, and, if I am well informed, even to be exchanged before the end of the war. From what I have heard of this person, I can say that he had not to make a great effort in order to be mistaken for a psychotic, although he never was manifestly ill. The point I want to make is, that successful malingering, particularly producing mental or nervous symptoms, cannot be carried out unless the malingerer is already on the threshold where normal character and manifest disease join.

Take the situation of the soldier who has developed a functional symptom, which gives him a sense of security from a situation of fear, such as mounting guard. With a certain amount of experience, one is able to differentiate between a soldier who just says that he is afraid from another one who is genuinely suffering from an excessive fear. It may be easy to say that one is afraid, but it is not as easy to produce of one's own free will all the physical and mental symptoms which usually accompany fear. For instance, it is very difficult to start to sweat, or to get pale just when you want to. But a neurotic person will produce the physical concomitants of fear, and this is, amongst others, a definite sign that the symptoms originate at a level which is outside the range of volition. Supposing we have decided that our patient who does not want to do guards is genuinely neurotic. The patient's first reaction to treatment will be one of suspicion and fear that he is made to do guards again. He cannot realise that there might be a state of mind, in which doing guards may not be connected with the same fears which he has hitherto experienced. The secondary gain from the illness is obvious, and we as

physicians feel this in our attempts at treatment as "resistance." I am perfectly correct in saying that the secondary gain and resistance is the same thing looked at from different directions, that is, from the patient's point of view, and from that of the doctor. Psychotherapy can thus be defined as the overcoming of resistance.

I have not said anything about transference, and I am not going to do so, as transference primarily concerns therapy, while in this lecture I am dealing with psychopathology.

So far, everything I have said is applicable to any form of psychoneurosis, and it remains for me to describe to you the clinical pictures of the three main psychoneurotic reaction-types. To start with the most superficial aspect: the hysteric is a patient complaining mostly of some physical symptom which has no organic basis, while in anxiety neurosis fear is the most prominent feature, and in obsessional neurosis the patient performs certain obsessional rituals, or suffers from compulsive thoughts. If you consider the symptoms in hysteria in the nineties and to-day, you will agree that the change is only equalled by the change in the way of life during the past fifty years. Considering this correlation, you will admit that I am justified in speaking of reaction-types. I will not go into the interesting question why and in which way this change is correlated to the changed way of life, but I can assure you it is possible to make a very convincing story. While the symptomatology of hysteria has changed, the mechanism has remained the same. It is what Freud called a conversion neurosis. This term says only that internal mental conflicts are converted into physical symptoms. It is not easy to explain how hysterical symptoms can be brought about. Take a simple example such as tachycardia. The ordinary man cannot make his heart beat faster of his own free will, although this is possible. As a student, I remember having seen a man who came round to the lecture-rooms, and made an income out of demonstrating a volitional change in the cardial rhythm. He denied that he accomplished this task by means of changing the intrathoracic pressure by attempted expiration or inspiration with closed glottis (Valsalva's and Mueller's experiments). It is possible that these phenomena are related to conditioned reflexes. One thing is sure, they are intimately connected with the emotional life of the patient, and yet it is remarkable how little emotion a hysteric shows: Charcot's "belle indifférence." But this is not really true. If you look deeper you will find a highly emotional personality, who has learnt to convert his emotions into functional symptoms. Who does not know the hypochondriac who seems to have no interests but his malady, who seems to nurse his symptoms with the greatest care, and expects everybody to respect his susceptibilities. In order to make the psychological mechanism of conversion symptoms clearer, I have to introduce another psychological term. Instincts, as they are known in the adult, have gone through a similar development as everything else in body and mind. It is not true to say that a child or even an infant does not possess instincts, including the sexual instinct, nor is it true to say that psychoanalysts assert that the infant has the same sexual instincts as the adult. Instincts do not originate from nothing,

they are existent in the child and infant even if only in the bud. It may not be easy to recognise an instinct in its infantile form if you only know it fully developed. Here is the place where I have to say a few words on the development of the sexual instinct. Whatever the teleological aim of the sexual instinct may be for the species, so far as we know it uses the "pleasure principle" for its purpose. In the mature individual, the sexual instinct is satisfied in the first place, not for the purpose of the preservation of the species, but for the satisfaction of a desire. The child has also desires, and its thirst for pleasure is even stronger than that of the mature person, as it is not yet mitigated by interests and other sublimating factors which are operating in the adult. But in keeping with the physiological development the desires of the child are different from those of the adult, and certainly not confined to any specific organs, such as the sexual ones, which have not reached their final physiological importance. If you see the suckling happily sucking his thumb or his big toe, you cannot doubt that the child is enjoying a pleasure. The zones which are particularly apt to give pleasure are called erotogenic. In the infant the mouth, for instance, is an erotogenic zone, and only in later stages of the instinctual development the sexual organs receive primary importance as an erotogenic zone. But even in the adult the infantile erotogenic zones do not fully lose their importance, as the kiss as an expression of affection and tenderness will bring home to you beyond doubt.

I have not forgotten that I was going to speak about conversion symptoms. In fact, I have all the time been speaking about the psychological background of the hysteric's interests in his organic complaint. This interest is comparable to an infant's, which may be attached to any part of his body, the thumb, the lips, the limbs, or any of the bodily orifices. The "belle indifférence" becomes a natural part of the picture. The instinctual balance of the hysteric is seriously disturbed. He has not the normal outlet for a reason which may not always be apparent, and his instinctual life has regressed to a stage which the normal individual has long passed. Hysterics do not show emotions, and you will concede that the emotions are an integral part of the instinctual life, because they are bound up in organic symptoms. This is the psychological explanation of the conversion symptom. To say it again: Repressed sexual emotions which cannot find a normal outlet, find some compensation by being displaced to another organ of the body, and thus the emotional tension is transformed into indifference, as the hysterical symptom provides an artificial outlet.

The conversion of emotional tension into a hysterical symptom is achieved by regression to an infantile level, where any organ is in principle endowed with the potentialities of an erotogenic zone.

With regard to treatment, do not try to remove the hysterical symptom directly, but try to get down to the root of the trouble, and you will find the apparently indifferent hysteric becomes a patient who is able to show emotions, and in doing so he loses his symptoms. I remember the case of a post office official who came to my ward with a hysterical hemiparesis. During treatment it became apparent that he was unable to have a normal sexual life with his wife, as his son slept

in the room next door. He was unable to get the door shut, either his wife or his son objecting. He ultimately had to give in, after many years' struggle. When he eventually fell ill with his hemiparesis, he had forgotten all about this, but during the treatment it became apparent again. His emotions, which had vanished, reappeared, and when his wife first came to see him in hospital, she was rather alarmed, not about his recovery, but about the fact that he had become affectionate. Finally, a little alteration in the outlay of the furniture of the home solved the problem. The man who arrived in an ambulance left the clinic walking without the aid of a stick. During the treatment, his actual symptom was scarcely mentioned, except in the later stages when the significance of his symptom was explained to him in connection with his unconscious problems.

This is a case of hysteria, but in real life you seldom find a "pure" case. It is often mixed with one or the other psychoneurotic reaction-type, particularly with the anxiety neurosis.

Anxiety is one of the many unsolved problems of psychology. We know fear is a normal response to danger, but it is difficult to understand where the great amount of anxiety that some patients experience originates. From a purely teleological point of view, it defeats its own purpose if you take the view that fear is a danger signal. It must have an instinctual source, otherwise we cannot understand the force with which it breaks over certain persons. Please forgive me if I do not go into detail of this very interesting problem. It alone would take more time than I can expect you to listen to me.

Anxiety is not always bound up with an object. It can be an undirected fear. Some people differentiate between fear and anxiety. They speak of fear when it is directed to an object, that is to say, a fear of something, while they understand by anxiety a feeling which has no visible cause or aim. Anxiety is also associated with certain organic diseases, such as angina pectoris, which throws light on a physical source of anxiety. You can see that it is rather a complex problem.

Anxiety states differ fundamentally from hysteria by displaying emotions prominently. Patients suffering from anxiety states have nothing that even resembles "belle indifférence," but it is very likely that you will find some physical symptoms. You will appreciate the psychological difference in the mechanism of the bodily symptoms in hysteria and anxiety states, if I say that in anxiety states the symptoms are usually physiological concomitants of fear and anxiety, while in hysteria they are due to displacement and conversion. This is something totally different. In keeping with this, you will find among the physical symptoms of anxiety states palpitations, tachycardia (effort syndrome), frequency in micturition, diarrhœa, etc. All these signs are the normal concomitants of fear. The anxiety-neurotic will have some of these symptoms even if he does not complain of them, his fear having taken the first place in his mind.

The problem of the anxiety-neurosis is best explained by quoting an actual case. I have taken it from the group of phobias. From a psychological point of view, there is no difference between the various forms of phobia, such as claustrophobia, agorophobia. Usually we find more than one of these fears in the same patient.

The medical psychologist does not consider the objects and situations of which the patient is afraid as the primary object of fear. Those objects have received their fear-provoking qualities from another one which they symbolically represent. This will become more lucid if you listen to this case history :—

A young girl was brought to me because she was unmanageable and would not go out alone, as she was afraid of crossing streets. She came from a cultured family, and before she fell ill, her father had promised to take her for a trip to the Continent (this was before the war) as a present for her twenty-first birthday. Before this trip could materialise, the girl developed the symptoms I just mentioned. But it soon became evident that these were not her only fears; for instance, she was afraid of travelling in a train, as she could not bear to be locked up in a compartment, and later still, she reluctantly spoke of an unaccountable fear which forced her to remove all pointed objects, such as needles, pins, and scissors, from her bedroom. At times she went to the extreme of removing the nails from the walls. She rationalised this fear by saying that she might injure her eyes with these objects.

The circumstances with which the neurotic symptoms started soon drew my attention to the girl's relationship to her father, and she confessed that she was not able to travel with him, as she was afraid of being mistaken for his wife. This explains the anxiety, and all the symptoms can be explained in terms of her relationship to her father. The symbolic significance of the pointed objects that might injure her, the fear of being locked up in a railway compartment, and the fear of being alone with him without being chaperoned. If being alone with her father is understood as the situation which she unconsciously considers dangerous, we see that she succeeds in avoiding that danger. On the other hand, the real connections are obscured by symbolic displacements. In this way the phobic reaction protects the patient against mental pain on two levels :—

(1) Her fears about her father may remain unconscious, because this fear is not experienced as such, but only after it has been symbolically displaced to other objects, such as pins and needles, and so on.

(2) She need not go on that trip, which would have brought her in close contact with her father, which was the original source of her fear.

The phobias are as numerous as the events and objects that are able to precipitate them. They may be represented by an inhuman officer, dive-bombing, an unhappy love affair, or a failure in an examination or in business. The precipitating factor alone is unable to bring about an anxiety state. It has to be supported by other factors, the understanding of which is of first importance, not only for the treatment of these conditions, but also for prophylaxis, such as building up morale. Take the instance of stirring up hatred. Some time ago the daily press was full of reports of an attempt of an over-zealous officer who hoped to raise the fighting spirit of his troops by stirring up hatred. Such a method is contra-indicated for psychological reasons. I have not yet mentioned the relationship of anxiety to aggression, or if you prefer, to hatred. Hatred is prone to increase the unconscious guilt, and therefore is prone to turn into anxiety. Men who go

into battle with this spirit are more likely to return with an anxiety-neurosis than others.

It is advisable to isolate individuals suffering from anxiety states from normal soldiers as soon as possible, as these states are extremely infective. In handling these cases, I give the same advice: do not force a patient with an anxiety to disregard his symptom. These symptoms are danger-signals for the patient, telling him that he is approaching a dangerous situation. If you force him to go on, you will produce an acute anxiety attack, which may be disastrous if only for the prospect of future rehabilitation, not to mention the effect on the morale of the unit.

I am now coming to the last group of psycho-neuroses, with which I shall deal very briefly: the obsessional neurosis. I have already mentioned its connection with anxiety when I said an acute attack of anxiety may be caused through preventing a patient from performing his rituals. From this point of view I can say that obsessional actions are carried out in order to ward off anxiety. The analysis of these cases usually shows that the actions—or compulsive thoughts—are a kind of retribution, as if the patient tried to make good what he has previously destroyed or injured. Obsessional neuroses are often very resistant to treatment. Some are in fact not far removed from psychoses.

I know obsessional patients who would not allow themselves to think freely, except in certain well-tried trends of thought. In a certain way these conditions have some resemblance to phobias: patients with compulsive thoughts are like those who will not go out for fear of meeting a horse. These compulsive thoughts give the patients some security from the danger of coming across a dangerous thought. You will understand that disturbances like these will often be accompanied by a change in the personality, and this provides the link to the psychotic reaction-types. Fortunately, these conditions are not very frequent in civil life, and even less frequent in the army.

In conclusion, may I say a word on therapy. I have not mentioned the special conditions of army psychiatry. Apart from the prophylactic work the army psychiatrist is doing, we carry out a certain amount of therapy. In this respect, we work under a heavy handicap compared with the civilian psychiatrist, but we also enjoy certain advantages. The army to-day is an organisation of such dimensions that a place can be found in it for almost everybody. While selection in "marrying" the need of the services with the potentialities of the individual, considers in the first place the momentary need of the service, we as psychiatrists engaged in therapy are able to place a soldier with full regard to the special needs of the individual. That does not mean that the need of the service is disregarded, but it allows us to make use of a soldier who otherwise would have been useless, and thus we are able to economise in man-power. This is a new way which has, as far as one can see, fully justified itself, and it contains possibilities which should not be neglected in post-war reconstruction. The vast majority of cases placed under this scheme has turned out to be a success, cases who would otherwise have been discharged from the army as permanently unfit for any form of military service. Thus the idea that the psychiatrist is the back-door that safely leads out

of the army, is one of the many misconceptions about the work of the psychiatrist.

In my view, the method of placing a man in a suitable post is the corner-stone of psycho-therapy in the army. In a strict sense of the word, it is no therapy at all. Neurosis is fundamentally a narrowing of the life and movements of the patient.

So long as the patient remains within the limits which his illness has allowed him, he is fairly well and efficient. In accepting his constitutional limits, and placing him accordingly, we allow him to remain efficient within his own limitations. Although theoretically this may not constitute therapy, I can assure you by being placed in the right job where he can be happy, a great change comes over the soldier, which, for all practical intents and purposes, is not far removed from a satisfactory therapeutic result. No need to say that we do not content ourselves in arranging suitable postings for our patients. They receive a certain amount of psycho-therapy, but, in my view, this could not be effective considering the short time available, and the difficulties of army life did it not receive the strong support of a fresh and congenial post.

In am indebted to Dr. J. A. Smiley for his remark during the discussion, that, in his experience as an industrial medical officer, the majority of cases discharged from military service on psychiatric grounds are difficult to employ in industry; some of them are almost unemployable. This confirms that the recommendations by army psychiatrists for discharge as unfit for military service, are made only in cases of very restricted employability.

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REVIEW

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The Psychological Approach to General Practice

By Donald J. C. Dawson, M.D.(Belfast)
and Thomas N. Rudd, M.D., M.R.C.P.(London)

When the young physician leaves his teaching hospital to enter the field of general practice, he often finds great disparity between the clear-cut disease patterns of the hospital ward or medical out-patient clinic, and the symptom pictures of the private consulting-room. Finding himself unable to explain the latter in terms of pathology, in his bewilderment either he blames his teacher for having taught him falsely, or he explains his patient's symptoms (1) as being figments of the imagination, (2) as being expressions of such doubtful pathological entities as chronic gastritis, colitis, and rheumatism, conditions seldom seen in the autopsy room, and of whose disease-basis he is by no means clear.

Modern teaching has attempted to clear the ground by postulating two opposite mechanisms producing the same symptoms, one based on demonstrable change in bodily structure, the second based on no such visible change, either at post-mortem or subsequent microscopic examination. The former group are termed the organic disorders. The latter, rightly attributed to disorder of function rather than of structure, are said to be "functional."

It is the alarming preponderance of functional disorder over organic disease, seen in the private consulting-room, that demands a rapid mental reorientation, which the practitioner is often unable to make. But make it he must, if he is to explain satisfactorily his patient's complaints. To fail in the endeavour is to court a sense of frustration, which so often attacks the enthusiastic doctor in the middle years of general practice. It is the aim of this paper to aid that reorientation of ideas.

Most practitioners will agree that a considerable number of patients are mentally, rather than physically ill. In certain cases the origin of the illness is clearly not organic.

> "Miss A., aged 48, is the sole attendant of her aged and exacting mother. For the past eighteen years, Miss A. has had a series of complaints which first suggested lung disease, then heart disorder, and lately chronic gastritis. Repeated clinical examination, supported by hospital investigation, has been negative. In spite of her alarming symptoms, she remains in average physical health, able to carry out her household duties."

Her doctor rightly considers her a neurotic woman: for such neurosis she has adequate cause.

> "Miss B., aged 30, has consulted her doctor for shortness of breath and precordial pain on exertion. She fears heart disease, but neither her G.P. nor the cardiologist can find evidence of this. Her private doctor, however, knows that she has lately given up agreeable office life, to nurse an invalid mother who requires much lifting. Bearing in mind the history of Miss A. (cited

above), he sends Miss B. to the local psychiatric clinic, where a diagnosis of conversion hysteria is made."

It is explained to her that her symptoms have arisen out of her change over to less pleasant duties and a fear of heart disease. Such disease would unfit her for heavy nursing, but would not incapacitate her from more congenial office work, to which she could then return with a clear conscience. An unrealised psychological conflict has thus been disclosed to her. She realises that her symptoms pointed a way of escape from her mental conflict, although this escape was on an unsatisfactory plane. The explanation abolished her symptoms and enabled her to find a more satisfactory solution to her problem. She was neurotic, but her neurotic symptoms have been banished by explanation. The traditional treatment of Miss B. with bromides, reassurance, and an exhortation to "pull herself together," would certainly have failed.

Now, the art of the psychiatrist is not entirely a skilled mystery. Psychology, modern or otherwise, is based on a study of humanity, and unfolds its truths to all those who look on their patients as human problems, and not only as the possible subjects of disease. In his approach, the physician's first question must always be, "Tell me about yourself," whether he puts it as bluntly as that, or not. It is essential that the symptoms be shewn against the background of the patient's life. He is invited to describe his symptoms as fully as possible, telling his story from the beginning, and in order as nearly chronological as possible. In the first telling he should be interrupted little. Only when he has exhausted his tale, should assistance be given to elicit further facts. Questions as to home influences, sexual and business worries, incompatibilities of temperament at home or abroad, religious problems can now be put. It is of the first importance that the physician should gain the psychoneurotic patient's complete confidence; the latter should feel that his doctor's one desire is to help him. It must be made clear to the patient that the story must be told in full, nothing being held back. The listener can then separate the irrevelant from the important. A careful and complete physical examination should now be made, the patient being impressed, if possible, by his doctor's thoroughness. In view of the time taken up by this procedure, it is sometimes necessary to postpone it until the next visit. An alternative lies in gaining the patient's confidence by a careful examination at the first interview, the eliciting of the detailed history being left until later.

A mental summing-up must now be made, physical factors being weighed against mental ones. If the clinical findings are quite normal, the patient should be told so without hesitation, the absence of bodily disease being stressed. Care must be taken not to attribute symptoms which are well and fully explainable on psychological grounds, to minor variations of bodily structure or function. The softening of a heart-sound and slight increase of blood-pressure should not easily be interpreted as meaning disease. By attributing them to disease, a healthy subject can often be converted to a neurotic sufferer, whose life becomes dominated by his physician's sphygmomanometer. In making a psychological assessment, care must be taken not to accept, without serious thought, the patient's explanation

for his symptoms. Few psychological truths are at first wholly acceptable to the patient, who often prefers phantasy to truth. If the patient's theory of the origin of his disease was correct, his insight would have led to self-treatment and not brought him to our consulting-rooms. Often more is learned from the manner in which the story is told, rather than from its content. In other words, what the patient says is often less important than the way in which he says it. The purposeful but unconscious omissions often indicate what the patient is most anxious to forget. Excessive emotional stress during the recounting of certain parts of the story (called "abreaction") is often a valuable pointer to the cause of the neurosis.

An assessment of personality arises out of this. The adequacy of the personality to deal with the varied situations that arise in a person's life will be shewn by his reactions to success, disappointment, bereavement, and the shocks that punctuate the life-stream; the ability to adapt the mind to the ever-changing pattern of life, indicates the strength of the personality. The assessment shews how far the mind has strayed from normal; the adequacy and strength of the personality shew what success can be expected from any line of treatment adopted. The following case histories illustrate the points raised :—

(1) A young man in the twenties reported to the Royal Victoria Hospital, Belfast, complaining of palpitation and nervousness of five weeks duration, unrelieved by rest or sedatives. Careful physical examination shewed no evidence of organic disease. It was elicited that the symptoms began after entering a new employment, which involved work of a difficult and technical nature. Conditions of work appeared satisfactory and happy; there were no apparent home or financial problems. In childhood, he suffered under fear of failure, and subsequent humilitation; he had become proud of his ability and hated being taught by others. He confessed, under questioning, that he had been recently upset by his slowness to learn the difficult work of his new employment; in spite of assurance that such difficulties were not unusual in beginners, his pride had been hurt.

Explanation was made that his rapid heart action and palpitation arose as an emotional reaction to his difficulties, and that they were the physical expression of a fear which tempted him to fly from an unpleasant situation. He accepted the explanation and returned to work the next day, willing to be satisfied by more gradual progress. He has since remained well.

(2) A typist, aged 20, developed a sudden "heart attack" late at night. She was a frail type, obviously very agitated, and had a pulse-rate of 120. There were no other abnormal findings. After a careful physical examination, she was informed that she had no heart disease or other physical defect. On being questioned as to possible causes of anxiety, she stated that on the next day she was due to return to her office after a short holiday. She was terrified of her employer, who frequently used threatening language towards her. It was explained that her tachycardia was an expression of fear caused by her dread of returning to her employer. This fear was more real to her than the fear of physical disease, which would in itself provide an escape

from intolerable surroundings. Change of employment was advised, and when this was arranged, her "heart attacks" ceased. Here again the escape motive is obvious.

(3) An anxious, introspective woman in late middle life reported, complaining of many symptoms, prominent among which were precordial pain, palpitations, and "acid stomach." She feared cancer of the breast, and asked for assurance about her heart. Her symptoms did not suggest organic disease, and a thorough examination indicated no disease-basis for her complaints. Great relief was shewn when she was given the necessary reassurance. Further interrogation disclosed that she was widowed a few years previously, since when she had had much worry and expense. She also stated, with obvious emotion, that her son had applied for a commission in a colonial police force, and that she dreaded his leaving home. Her abreaction served as a pointer to the source of her anxieties. She was helped to realise the link between these anxieties and her present symptoms of fear. Advice was given not to "bottle up" her worries, but to face them and adapt herself to the coming loss. She accepted the explanation, and her symptoms at once disappeared.

The ætiology of the psychoneuroses is too wide a subject for consideration in a paper such as this, so many differing views having been expressed by divergent schools of thought. There is, however, no doubt that inability to adapt the life to its surroundings is an important factor in the development of a neurosis. In dealing with a patient's psychological problems, the mental background is therefore of great importance. Environment, which includes mental background, has two aspects. The first is the patient's internal environment, built up by himself and composed of his attitudes and instincts. The second factor is the external environment, provided by family and occupation. It is to this ever-changing external environment that adaptation is constantly required. When failure to adapt occurs, neurotic symptoms appear. In considering mental background, certain definite patterns emerge. There is, for instance, the patient with an inherited mental instability, whose childhood was full of fears engendered by anxious, neurotic parents, whose schooldays proved him a bad mixer and whose business career revealed a dread of responsibility. There is the dull child of degenerate physical type, whose school record was characterised by inability to learn, and who, on leaving school, finds himself unable to keep any job more than a few weeks, until at last he finds one to which his limited capacities can adapt themselves. A third and common type of environment produces what Adler calls "the pampered style," a condition of excessive indulgence of the child by unwise relatives. This produces in later years, an expectation of favours that the world does not readily confer, and an attitude of resentment when these favours are denied. In all these types, the failure to adapt the personality to life as it really is, provides the basis for the origin of the neurotic symptoms.

As has been shewn by the case histories cited above, these symptoms often arise in an effort to escape from an unpleasant situation. Unwilling or physically unable

". . . to take up arms against a sea of troubles, and by opposing, end them,"

the patient finds an escape from reality in his symptoms or even in actual disease, which will secure his release from the conflict; case (4) illustrates this point.

(4) A rent collector, aged 43, reported to the Benn Hospital complaining of anosmia; no naso-pharyngeal disease could be detected, but he was obviously of neurotic type. He had a mental background of timidity, resulting in a distaste for his type of work. He lived in a dread of rough reception from angry tenants, but could not, in face of home responsibilities, risk unemployment by seeking a change. His fears culminated in the thought, "How terrible it would be if I lost my sense of smell, and that someone should turn on the gas to kill me, while I waited for the rent." The anosmia was hysterical, and provided a way of escape from his employment, which he could accept without loss of self-respect. Psychiatric treatment consisted in explanation, convincing him by inhalation of strong ammonia that his sense of smell was not deficient, and help to solve his difficulties in a more satisfactory way.

As these examples shew, the symptoms of which a neurotic patient complains are often those associated with the physical expressions of such mental states as fear and uncertainty. Thus, shortness of breath (a phrase often used to indicate tachypnœa, palpitation, muscular tremors, and sweating), common as an expression of anxiety, dizziness, nausea, and sometimes true vertigo (the common concomitants of mountain sickness) may indicate instability. A man of strong imagination may tell us that he feels as if he lived on the edge of a volcano. If, however, this realisation of uncertainty only occurs at the deeper levels of thought, unperceived by the conscious mind, the volcano-idea will not emerge into consciousness, associated with a recognised fear. It will rather emerge in dream symbolism, as it did in the following case :—

(5) A highly imaginative and introspective child, 10 years old, emotionally unstable and slow to make friends, covered with a sophisticated manner her sensitivity to the opinions of others. Sixteen months prior to the present interview, there had been a "nervous breakdown," characterised by nervousness and insomnia, requiring relatively large doses of bromides for its control. The child's sleeplessness had now returned, but the event that had alarmed her parents most, was her coming down to them during an evening in an agitated manner, because she thought there was an volcano in eruption behind her bed. She could see its shadow, and was afraid to look round. When her confidence had been gained, she stated that she had read about a volcano three years ago, and although she had not at that time been alarmed by the story, her mind had been deeply impressed by the incident, as was shewn by the clearness with which the details had been remembered. She said that she had no worries, but later recollected, quite suddenly, that in her last term at school, she had been rather cruelly victimised by two other girls. She was due to return to school very soon. The dread of the unhappiness that might recur had been banished from her mind by an automatic act of forgetfulness, but had shewn itself, in altered guise, under the

symbolism of a volcano which might at any time overwhelm her. An understanding of her real fears led to the promise of a change of school. Her fears and troubled thoughts dispersed at once, and did not recur.

Fear often expresses itself in acute attacks, usually at night. These anxiety attacks, as described the following day, are quite naturally often diagnosed as bronchial asthma, from the bias given by the patient. The following case typifies this :—

(6) A woman of 56, who had recently nursed her daughter, aged 16, through a severe pneumonia, awoke one night in great terror, thinking that she too had developed the disease. She complained of symptoms similar to those from which her daughter had suffered. Her respiration was markedly hurried, her pulse-rate 120, but there was no fever, nor could evidence of lung disease be found. She was fully reassured about this and the origin of her symptoms in anxiety, pointed out to her. Her distress immediately lessened, her anxious look disappeared, and in a few minutes both pulse and respiration rates were normal.

The differential diagnosis of the psychoneuroses lies between organic disease producing similar symptoms and a psychosis. The latter includes the mental aberrations following petit mal epilepsy, and the periodic disturbances of mood which may alternate with grand mal attacks. A tracing of the life-path from early youth often aids the differentiation. The neurotic usually shews an instability and a failure to adapt himself from earliest years, while in the psychotic, mental development is apparently normal, until at some stage in adolescent or adult life, something happens to pervert the life force. A mind which has hitherto developed normally then begins to shew abnormalities, or to retrogress. Traits such as negativism, impulsiveness, and loss of normal affection, with detachment of emotion from action, are characteristic of schizophrenia. The neurotic's willingness to talk of his symptoms, his feeling that "things would be all right" if only his environment could be adapted to suit him, contrast strongly with the psychotic's unwillingness and the self-blame and hopelessness which he often exhibits. A mild thyrotoxisis is often diagnosed when the symptoms are due to anxiety neurosis. If it is realised that the symptoms are much alike, but that the former is much less common (being, in fact, rare in males), wrong diagnosis is unlikely to be made. The classical signs of exophthalmos, thyroid enlargement, moist skin, and large appetite (as well as other signs, such as tremor, tachycardia, and wasting, common to both anxiety neurosis and Graves' disease) should be required before a diagnosis of thyrotoxicosis is made.

A discussion of treatment is outside the scope of this article, but its basis lies in explanation of the origin of the symptoms and the establishment of a readjustment between the patient and his environment.

A word of warning should be given against exhorting the patient to use his will-power and to pull himself together. As the late Dr. T. A. Ross pointed out, the normal person exerts his will-power much less than many people suppose. In his own words: "Healthy people are not making any stupendous effort to carry

out their work. Work, if it is of any interest, is carried out with more ease than idling. If work is being done in a condition which requires constant flogging before it is accomplished, it will be found to be of very little value, and will soon better not be done at all." The will, he writes, " . . . is very like the engine starter of a motor-car, which may be used for a few seconds, but for a few seconds only, to start the engine. It is a bad practice to keep on using it, for it will only run the battery down. If I have to use it unduly, there is something wrong, which I ought to investigate. Note that I can move the car for some yards by means of the engine starter alone, but the ultimate results of doing so will be very serious. Equally nothing but damage will result from any prolonged attempt to work by the exercise of will-power." To urge the patient to pull himself together is thus essentially unsound. As Sir James Paget has expressed it: "The patient says she cannot, the nurse says that she will not, the truth is that she cannot will."

SUMMARY.

A working understanding of the origin and treatment of the simpler psychoneurotic symptoms met with in general practice, is not beyond the scope of the general physician, who has had no specialised psychological training.

This understanding requires appreciation of the origin of such symptoms and investigation of the patient's physical and mental environment, on the lines suggested above. Normal case-taking must therefore be expanded to include the assessment of environment, in its widest sense, in any case where psychological factors may be playing a prominent part.

Treatment by explanation, readaptation, and encouragement will often be followed, in simpler cases, by gratifying success. Treatment at psychiatric clinics can then be reserved for more difficult cases, or those which are not considerably benefited by the above measures.

We acknowledge our indebtedness to Dr. R. S. Allison, M.D., F.R.C.P., Physician to Royal Victoria Hospital, Belfast, for kind permission to use the case histories on which our examples were based.

REVIEW

INFANT FEEDING IN GENERAL PRACTICE. By J. Vernon Braithwaite, M.D., F.R.C.P.(Lond.), with a Foreword by H. C. Cameron, M.A., M.D., F.R.C.P. Second Edition. Bristol: John Wright & Sons Ltd. Pp. 165. 7/6.

THIS is an admirable little book, based on the knowledge gained by the author first in general practice and later on the staffs of two hospitals. He is an ardent advocate of breast-feeding, and shows how real or imaginary difficulties in its promotion may so often be solved. His writing is simple and eminently readable, with many clinical case records to support this argument. In the new edition the section on vitamins has been augmented, an account of the feeding of the premature infant has been added, and a short chapter on the common deficiency diseases has been included.

This is a book which might well be presented to every young doctor, every newly-certified midwife, and every young mother.

out their work. Work, if it is of any interest, is carried out with more ease than idling. If work is being done in a condition which requires constant flogging before it is accomplished, it will be found to be of very little value, and will soon better not be done at all." The will, he writes, " . . . is very like the engine starter of a motor-car, which may be used for a few seconds, but for a few seconds only, to start the engine. It is a bad practice to keep on using it, for it will only run the battery down. If I have to use it unduly, there is something wrong, which I ought to investigate. Note that I can move the car for some yards by means of the engine starter alone, but the ultimate results of doing so will be very serious. Equally nothing but damage will result from any prolonged attempt to work by the exercise of will-power." To urge the patient to pull himself together is thus essentially unsound. As Sir James Paget has expressed it: "The patient says she cannot, the nurse says that she will not, the truth is that she cannot will."

SUMMARY.

A working understanding of the origin and treatment of the simpler psychoneurotic symptoms met with in general practice, is not beyond the scope of the general physician, who has had no specialised psychological training.

This understanding requires appreciation of the origin of such symptoms and investigation of the patient's physical and mental environment, on the lines suggested above. Normal case-taking must therefore be expanded to include the assessment of environment, in its widest sense, in any case where psychological factors may be playing a prominent part.

Treatment by explanation, readaptation, and encouragement will often be followed, in simpler cases, by gratifying success. Treatment at psychiatric clinics can then be reserved for more difficult cases, or those which are not considerably benefited by the above measures.

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Some Aspects of the Infant Mortality Problem in Belfast

By JAMES DEENY, M.D., M.SC., F.R.C.P.I., M.R.I.A.,
AND ERIC T. MURDOCK, B.SC., PH.D., A.I.C., LURGAN.

A STUDY has been made of the infant mortality problem in Belfast, with the object of determining the chief factors underlying the excessive death-rate found in the city. For the year 1941, the rate for Belfast was 91.5 per 1,000 registered births, compared with 111 in Glasgow, 92.4 in Dublin, 76.5 in Newcastle-on-Tyne, 76 in Middlesbrough, 75.8 in Hull, 66 in Edinburgh, and 61 in Leeds.

The infant deaths occurring in Belfast from June, 1941, to June, 1942, were selected for study, and of these, 554 cases—84 per cent. of the total deaths of legitimate infants for that period—were investigated. Information was collected concerning a sample of children, who had survived one year of life in this city. This will be referred to as the "Control Group," and was established by selecting every fifth child born during the first six months of the period and, allowing for wastage, finally numbered 477. The data required was in all cases obtained by a personal visit (by E. T. M.) to the parent or guardian, the majority of whom were agreeable in answering the questions. Cases were excluded where the fatal illness was due to hardships resulting from previous air-raids, and where families had moved from the city and could not be followed up.

The study was divided into several sections and, as can be seen from the inquiry card used, questions were asked concerning :—

(1) Particulars of the size of the family and the number of previous infant deaths.

(2) Social features. The income available to the mother for household purposes, housing, and domestic hygiene.

(3) The care of the child, feeding, and welfare clinic supervision.

(4) The birth of the child, the ante-natal care, attention at the confinement, etc.

(5) In the group of children who died, factors associated with the fatal illness.

This paper is concerned with the findings resulting from an analysis of some factors included in section 5.

CAUSE OF DEATH.

The following table (I) shows an analysis of the certified cause of death in the 554 cases studied. It will be seen that the three principal causes of death are respiratory, gastro-enteritis, and prematurity. This has been pointed out by C. S. Thomson, Superintendent Medical Officer of Health for Belfast, in a report on the subject (1942).

Infant Mortality Survey

Number.....

Name of Child.....

Address.....

Date of Death..... Age..... Sex.....

Cause of Death .....

Occupation of Father..... Household Income.....

Place of Child in Family and previous mortalities 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

HOUSE

Number of Rooms..... Number of Persons.....

Rent..... Domestic Hygiene.....

CARE OF CHILD

Who minded Child..... Welfare Clinic Supervision.....

How fed..... How long Breast-fed.....

Were foods sterilised.....

BIRTH

How often Ante-natal Exam.....

Who attended Confinement .....

Any difficulty.....

FATAL ILLNESS

Duration..... How long before Doctor called.....

Private or Dispensary. How many visits, Doctor.....

„ „ „ Nurse .....

„ „ „ Visitor.....

Was Child admitted to Hospital.....

How long Child ill before admission.....

„ „ „ lived after admission.....

Did illness occur at Dentition Time.....

PERSONAL OBSERVATIONS

TABLE I

CAUSES OF DEATH.

CAUSE	Number
Diarrhœa and Enteritis	101
Pneumonia, Bronchitis, and Congestion	131
Premature Birth and Injury at Birth	131
Congenital Malformations	48
Congenital Debility and other Infantile Diseases	57
Convulsions	33
Common Infectious Diseases (smallpox, measles, etc.)	6
Tuberculous Diseases	8
Other Causes	39
TOTAL	554

INCIDENCE OF DISEASE AMONGST INFANTS OF THE CITY.

We considered it important to determine the general extent of illness amongst the infants of the city and, since gastro-enteritis and respiratory infections are responsible for 232, or 42 per cent., of the deaths in the "mortality" group, we have inquired into the prevalence of these diseases in the control group of 477 babies. The parents in this group were questioned on the number of times during the year that their children had suffered from either of these two conditions, necessitating medical aid. We found it impossible to adopt a completely rigid standard, but sufficient detail was collected in each case to allow us to omit some obviously trivial cases where the doctor was consulted, and to include two cases of serious respiratory or digestive illness who had no medical attendant.

TABLE II

THE INCIDENCE OF DIGESTIVE AND RESPIRATORY INFECTIONS IN THE CONTROL GROUP.

CONTROL GROUP	Number		Percentage
No illness	350	...	73.4
Digestive illness only	32	...	6.7
Respiratory illness only	75	...	15.7
Both digestive and respiratory illnesses	20	...	4.2
TOTAL	477	...	100.0

As a result of this inquiry, we find that the incidence of these two disease groups is very low. Of these children (477), representative of the entire infant community of Belfast, 350, or 73.4 per cent. (vide table II), were completely free from either of the illnesses which are the two major causes of infant deaths in the city. Further, in only 8 cases of the 127 children who were affected—less than 2 per cent. of the control group (477)—were these illnesses of sufficient severity to require admission to hospital. Moreover, of the illnesses in this group, 53, or

41.7 per cent., occurred during dentition, showing that teething had an important influence. This contrasts with the mortality group, where, of the proportion who died from respiratory or digestive infections, only 28.9 per cent. (or 67 of 232 children) contracted the fatal illness during dentition, suggesting that different factors may be responsible in the two groups.

Care of Infants during the Fatal Illness.

Several features of the care of the infants during the fatal illness were considered, namely :—

1. Health visitation.
2. Medical attendance.
3. Nursing.
4. Hospitals.
5. The relationship of income to care during the fatal illness.

1. *Health Visitation.*

The extent of the supervision of mothers and infants in the mortality group by Corporation health visitors was considered. In approximately 90 per cent. of the cases we found that a visitor from some branch of the Corporation's health department had attended either before or shortly after the child's death. Children of better-off parents were not supervised. It is difficult to assess the effects of such health visitation, but it seems to us that, considering the staff available and the number of households to be visited, sufficient time could not be afforded to each case. During the course of our study we were favourably impressed by the efforts of those responsible for this service.

2. *Medical Attendance and the Fatal Illness.*

The various aspects, which we have studied, of the medical attendance during the fatal illness are dealt with as follows :—

(a) *When was medical aid summoned?*—Table III summarises the results of this part of the inquiry. It shows that in 80 per cent. of the cases the doctor was consulted on the first or second day of the fatal illness. For the respiratory or digestive diseases in the control group, the tendency was to call in medical aid somewhat later. We refrain from any comment on the fact that 35 babies died without receiving any medical attention, either because a doctor was not called (8), or the child had died before his arrival (27).

(b) *Nature of medical aid.*—The nature of the medical aid sought is analysed in table IV, which shows that for more than half the children, especially for cases of preventable illness, the medical aid summoned was the family doctor. This is confirmed by even higher figures for the illnesses in the control group.

(c) *Adequacy of medical aid.*—An attempt was made to determine the adequacy of the medical attendance by careful examination of the individual cases. This evaluation was based on a consideration of the number of times the child was seen by a doctor and the nature and duration of the disease. Due

regard was paid to the fact that these were cases of fatal illness. The relative and subjective nature of these standards must be stressed, but doubtful cases were always given the more favourable classification.

In 68 per cent. of the cases reviewed (vide table V) the medical attendance was considered to be satisfactory. The 8 cases where a doctor was not called, and the 27 cases where the child was dead before his arrival, are included in the unsatisfactory classification. The table records figures for the digestive or respiratory illnesses of the control group.

TABLE III

DAY OF ILLNESS WHEN MEDICAL AID WAS SUMMONED.

	Numbers		Percentages	
	Mortality Group	Control Group	Mortality Group	Control Group
Called: First day	219	27	56.8	21.6
Second day	88	43	22.9	34.4
Third day	37	31	9.6	24.8
From third day to one week	13	13	3.4	10.4
After one week	28	11	7.3	8.8
TOTAL	385	125	100.0	100.0
Doctor not called	8	2		
Infant dead before arrival	27	—		
In hospital from birth	134	—		
No illness	—	350		
TOTAL	554	477		

TABLE IV

NATURE OF THE MEDICAL AID SOUGHT.

	Numbers		Percentages	
	Mortality Group	Control Group	Mortality Group	Control Group
Absence of medical aid	35	2	8.3	1.6
One private doctor	221	82	52.6	64.6
Two private doctors	40	13	9.5	10.2
Three or more private doctors	15	—	3.6	—
Dispensary doctor only	30	16	7.1	12.6
Dispensary doctor and others	31	7	7.4	5.5
Hospital extern	28	2	6.7	1.6
Hospital extern and other(s)	20	5	4.8	3.9
TOTAL	420	127	100.0	100.0
In hospital from birth	134			
TOTAL	554			

TABLE V

ADEQUACY OF MEDICAL AID.

MEDICAL AID	NUMBERS		PERCENTAGES	
	Mortality Group	Control Group	Mortality Group	Control Group
Satisfactory	286	87	68.1	68.5
Fairly satisfactory	59	29	14.0	22.8
Unsatisfactory	75	11	17.9	8.7
TOTAL	420	127	100.0	100.0

3. *Nursing in the Fatal Illness.*

At some time or other during the fatal illness, 352 of the children in the mortality group required nursing in their homes. In spite of the greater necessity for trained nursing in diseases of children, and the fact that these were all cases of fatal illness, only in 31 out of the 352 deaths (or 8.8 per cent.) could the nursing be considered satisfactory, in that it had been carried out by persons qualified for the work. In 42 cases it was unsatisfactory and in 279 cases, that is, 79.3 per cent. of those who were cared for at home, there was a complete absence of all proper nursing (vide table VI).

TABLE VI

HOME NURSING IN THE ILLNESS.

	NUMBERS		PERCENTAGES	
	Mortality Group	Control Group	Mortality Group	Control Group
Satisfactory	31	7	8.8	5.5
Unsatisfactory	42	34	11.9	26.8
Absence of nursing	279	86	79.3	67.7
TOTAL	352	127	100.0	100.0
In hospital from birth or under care of the maternity nurse	202			
TOTAL	554			

4. *Hospitals and the Fatal Illness.*

(a) The number of children admitted to hospitals or other institutions was determined. Table VII shows that of the children who died, 176 were admitted to hospital and 134 were born in hospital and remained there till death. It has already been mentioned that only 8 cases of the control group were in hospital for gastro-enteritis or respiratory diseases.

(b) Table VIII gives the children who were admitted to hospital classified according to the fatal illness. The figures show that hospital admissions for the major causes of death (excluding prematurity) are fairly evenly distributed.

(c) In table IX, the hospital cases are grouped to demonstrate how long the children had been ill before being sent to hospital, and the length of time in hospital. This analysis was an attempt to determine whether any undue delay occurred in sending cases to hospital. We feel that any conclusions drawn from these figures might be misleading, in view of the influence of other undetermined factors.

TABLE VII

ADMISSIONS TO HOSPITAL OR OTHER INSTITUTION IN THE GROUP OF INFANTS WHO DIED.

MORTALITY GROUP	Number
Not admitted to hospital, and died in a private house	244
Admitted, and died in hospital	138
Discharged from hospital before death or readmitted for same illness—	
Died in hospital	14
Died in private house	24
In hospital from birth	134
TOTAL	554

TABLE VIII

ADMISSIONS TO HOSPITAL CLASSIFIED ACCORDING TO THE FATAL ILLNESS.

MORTALITY GROUP	Gastro-Enteritis	Respiratory Infections	Pre-maturity	Other Causes	Total Number
Not admitted	46	65	42	91	244
Admitted	34	49	3	52	138
"Readmitted"	16	8	4	10	38
In hospital from birth	5	9	82	38	134
TOTALS	101	131	131	191	554

TABLE IX

SHOWING HOW LONG THE CASES WERE ILL BEFORE ADMISSION TO HOSPITAL AND THE LENGTH OF TIME IN HOSPITAL.

MORTALITY GROUP	Number Ill Before Admission	Number in Hospital
Less than one day	19	13
One day, but less than three days	41	38
Three days, but less than one week	40	30
One week, but less than two weeks	26	32
Two weeks, but less than four weeks	20	29
Four weeks or over	30	34
TOTAL	176	176

5. *Relationship of Income to Care during Fatal Illness.*

Another part of this study dealing with the effects of social factors—to be published elsewhere—shows the controlling influence of a factor or factors,

represented by income, on the mortality-rate. We have also studied the relationship of income to care given in the fatal illness. The children of the two groups (mortality and control) were divided into three income grades, based on the amount, less rent, per head per week, available for household purposes. The income-levels were under ten shillings per week, ten shillings and under fifteen shillings per week, and over fifteen shillings per week. Using this classification, the figures were analysed for the following features :—

(i) *When was medical aid summoned?*—Table X records for the mortality group the times in the illness when the doctor was summoned. It can be plainly seen that poverty did not prevent parents from obtaining prompt medical attention. For this table, relating income and the length of time before doctor was called, $X^2 = 9.3$, which, with $n = 6$ ($0.2 > P > 0.1$), indicates mathematically that there is no significant relationship between these factors.

(ii) Analyses, in relation to income, of the nursing care and hospital features already considered, show no significant relationships (either apparent or mathematical).

(iii) A consideration of the adequacy of medical care in relation to the income (table XI) shows that, in the poorest group, there is a slightly greater proportion of cases who have had unsatisfactory medical care. Employing the X^2 test of significance for the relation between medical care in the poorest income-level and that in the other income grades, the value found gives a result of doubtful statistical significance—indicating little relation between income and adequacy of medical care ($X^2 = 4.6$; $n = 2$; $0.10 > P > 0.05$).

Consequently, from our data, income would appear to have little influence on medical and nursing care during the fatal illness.

TABLE X

INCOME AND DAY OF ILLNESS WHEN MEDICAL AID WAS SUMMONED.

For this table, X^2 is 9.3, which, with 6 degrees of freedom, gives a value of P between 0.2 and 0.1.)

	INCOME, Less Rent, per Head, per Week			TOTALS
	Under 10/-	10/- and Under 15/-	15/- and Over	
Called : First day	97	57	65	219
Second day	44	27	17	88
From second day to one week	18	20	12	50
After one week	16	6	6	28
TOTALS	175	110	100	385
Doctor not called	4	—	4	
Infant dead before arrival	9	6	12	
In hospital from birth	43	36	55	

TABLE XI

ADEQUACY OF MEDICAL AID IN RELATION TO INCOME.

(Considering the income levels, (i) under 10/- and (ii) 10/- or over, X^2 is 4.6. Therefore, with n=2, P is between 0.1 and 0.05.)

MORTALITY GROUP MEDICAL AID	INCOME, Less Rent, per Head, per Week			TOTAL NUMBER
	Under 10/-	10/- and Under 15/-	15/- and Over	
Satisfactory	121	84	81	286
Fairly satisfactory	25	17	17	59
Unsatisfactory	42	15	18	75
TOTAL	188	116	116	420

REVIEW.

It is essential that all efforts to reduce infant mortality in Belfast be based on a clear understanding of the causes, considering that diseases principally responsible can be regarded as "preventable." Spence, in a "Report of an Investigation into the Causes of Infant Mortality in Newcastle-upon-Tyne during the year 1939," investigated 272 infant deaths. On the results of a small series of post-mortem examinations, and case histories, he formed the opinion that in one-third of all his cases, the recorded death certificates were so inaccurate that statistics based on the information they contained would be misleading. We agree that this might take place to some extent in Belfast, but our experience is, that in most of the deaths the causes are only too apparent, and such a degree of inaccuracy could not occur.

The object in determining the extent of respiratory and digestive diseases in the control group, is to obtain information on the proportion of children contracting these diseases who succumbed to them. Our figures show that throughout the control group, representative of living children in Belfast, there is a low incidence of these two diseases, which are known to be the chief cause of infant death. Where children in the control group do suffer from these conditions, they are of a mild nature. The doctor is not called in as early as for similar conditions in the mortality group. Only a very small number are admitted to hospital, and nearly half the cases must have been related to teething. We regard these findings as of great importance. It is not apparent whether a more virulent form of respiratory or digestive infections was prevalent amongst the children who died, or whether the general resistance of this group was lower. It is clear, however, that the general health of the children of the city is not so bad as the high mortality-rate would suggest.

In the section of the paper dealing with the care of the child, we have noted the fact that in four-fifths of the cases the doctor was called in on the first or second day of the fatal illness, showing that the parents were prompt to realise the serious nature of the disease, and acted accordingly. Furthermore, the poor

secured medical attention as early as those better-off, and were not prevented by their poverty from seeking and obtaining medical aid.

The high percentage of people who consulted their family doctor is noteworthy, and consequently, it is plain that both the skill and the ability of practitioners to give their patients adequate attention has an important effect on the mortality-rate. We have shown that, in the majority of cases, medical attention is adequate, in that the doctor made a sufficient number of visits relative to the nature and duration of the illness. Assuming further, that the preventable diseases prevalent can be cured by ordinary medical treatment, one reason for the failure to produce better results would be that the treatment prescribed by the doctor is not carried out satisfactorily. In some areas a higher standard of education and living may possibly bridge this gap, but we believe it is largely due to the fact as shown by our study, that there is an almost complete absence of trained nursing in illness.

Our study shows that serious illness seems to affect almost exclusively a comparatively small group of children, and points to the possibility of organising a service of trained nurses to care for the serious cases in their own homes. Such a scheme would require the co-operation of the mothers, and especially the general practitioners. In view of the extent of the work carried out by the general practitioner amongst children, failure to co-ordinate their work with the remainder of the health services has retarded progress, although it is difficult to see how such a development could be effected without widespread changes in the present medical system.

We are not satisfied that conclusions can be drawn from our figures relating to hospital admission, nor is there any significance between income and medical attendance accorded to the infants who died.

As a point of technique in social medicine, this is the first infant mortality study in which a control group of the nature specified has been established, and used to demonstrate abnormalities which otherwise would not have been apparent.

This work is portion of a study of the infantile mortality problem in Belfast, which will be presented to the Statistical and Social Inquiry Society of Ireland. We wish to thank the Medical Research Council of Ireland for their generous assistance. We are grateful to the Director, the Senior Statistician, and Staff of the Statistical Branch of the Department of Industry and Commerce, Eire, for machine compilation of the data and technical advice, and appreciate their kindness and courtesy.

Studies from the Institute of Pathology

CASE XII—A3727 (BA112).

CONGENITAL HEART DISEASE WITH BACTERIAL ENDOCARDITIS

Clinical History.

The patient was a boy of sixteen years. On admission to hospital he gave a history of "heart trouble" since birth. This was chiefly manifested by breathlessness on exertion. He had always been of a blue colour. He had been twice in hospital in the last year with swelling of ankles and face. Four weeks ago he took a sudden severe "crushing feeling" in his chest which was accompanied by abdominal pain. When the pain passed off he felt very weak and vomited frequently. Since this episode he had been breathless without exertion and had transient attacks of vertigo, and a few days before admission his ankles began to swell.

There was nothing relevant in the family history. His bowels were regular, but he ate and slept poorly. The amount of urine passed had diminished.

On examination he was very cyanosed and a little breathless. There was marked œdema of the feet, ankles, and sacral region. His fingers showed clubbing. The pulse-rate was 120, was regular, and its volume and tension fair. The apex-beat of the heart was forceful and diffuse, and was palpable in the fifth intercostal space five inches from the middle line. By percussion the heart was found to be enlarged to the right of the sternum. On auscultation there were presystolic and systolic murmurs at the apex, and a systolic murmur in the pulmonary area. The blood-pressure was 110 systolic, 50 diastolic.

In the chest there was dulness at both bases, with diminished breath-sounds and vocal resonance. A fluid thrill was felt in the abdomen. The spleen and liver were easily palpable. No signs of disease were found in the other systems.

The day following admission one and a half pints of clear fluid was aspirated from the right pleural sac. A radiograph showed bilateral pleural effusions and transverse enlargement of the heart to the right. A blood-count showed 5,310,000 red cells and 11,100 white cells per cubic millimetre. Spectroscopic examination of the blood revealed no abnormal pigments such as methæmoglobin. The urine contained a trace of albumen throughout the illness, and the temperature ranged between 97° and 99°F.

After the first week in bed the œdema cleared up slightly, but in the next three weeks it grew steadily worse. The cyanosis was persistent. During this time a notable feature was the changing character of the murmurs in the heart. A systolic thrill became palpable at the apex and an aortic diastolic bruit was heard. All the murmurs varied greatly in intensity from day to day. On the twelfth day it

was noticed on feeling the pulse that every third beat was missing. He developed a troublesome non-productive cough and complained of difficulty in swallowing solid foods. On examination of his throat, numerous small petechial hæmorrhages were seen on the soft palate. He became increasingly dyspnœic and cyanosed, the œdema became generalised, and he died in his sleep four weeks after admission to hospital.

Post-Mortem.

The body is that of a rather stout youth. There is no evidence of under-development. Post-mortem rigidity is present in neck, arms, and trunk. The skin of the entire body is livid, except in the middle line over the chest and abdomen. The impression of stoutness is accentuated by œdema of feet, ankles, legs, scrotum, penis, sacrum, abdominal and chest walls, neck and face. There is very marked clubbing and cyanosis of all fingers and toes. There is no genital or axillary hair.

Body cavities.—The peritoneal cavity contains about a gallon of brownish-coloured ascitic fluid. The pericardial sac contains a large excess of clear amber-coloured fluid. With the heart it occupies most of the anterior part of the chest cavity, lying transversely in the mid-line. Both pleural sacs contain a great excess of clear brownish fluid.

Heart.—The heart is globular in shape and enlarged. It weighs 16½ ounces. The epicardium is smooth and contains many small petechial hæmorrhages. There appears to be only one arterial trunk arising from the ventricles. The venæ cavæ and right auricle are tensely dilated with blood. The right auricular appendage is also dilated so as to form part of the general cavity of the auricle. The wall of the appendage shows several small dark red swellings in the muscle a half to one centimetre in diameter. These have the appearance of recent hæmorrhagic infarcts. The endocardium is smooth. The tricuspid ring admits four fingers easily and is dilated. The tricuspid valves are thin and translucent. At one point on the ventricular aspect of the posterior cusp near its free margin there are several small rough pink sessile vegetations.

The right ventricle is dilated and hypertrophied, the wall being one and a half centimetres thick. The papillary muscles, columnae carneæ, and moderator band are hypertrophied. The myocardium is dark brownish red in colour and feels firm. At one point in the cut surface near the apex there are several small dark red areas about one centimetre in diameter with irregular sharply demarcated edges. They have the appearance of recent infarcts. One papillary muscle shows a firm irregular greyish white area about the same size which is a healed infarct. The endocardium is smooth. The pars membranacea of the interventricular septum is absent, leaving an opening 1.8 centimetres in diameter between the two ventricles. The aortic opening sits astride the deficient septum, and the vessel arises as much from the right ventricle as the left. The conus arteriosus is markedly hypertrophied. From it opens a very narrow pulmonary artery which lies in front of the aorta at a lower level than normal. There are two pulmonary

valve cusps. They are greatly thickened, fleshy and rigid, forming a funnel-shaped diaphragm with a small central aperture. The free margins of the cusps are covered with small rough reddish pink fibrinous vegetations. The diameter of the main pulmonary artery is 1.5 centimetres and the walls are very thin, like those of a vein. The vessel divides into right and left branches in the normal manner. The ductus arteriosus is closed.

The left auricle is very small, being about four centimetres in diameter. The endocardium is smooth and pink. The foramen ovale is closed. There is no hypertrophy of the muscle, and the auricular appendage is free from clot. The mitral valve admits two fingers easily and is slightly dilated. The cusps are thin, smooth, and translucent. The left ventricle is not dilated nor hypertrophied. The muscle is equal in thickness to that of the right ventricle, being 1.5 centimetres across. It is brownish red in colour and firm. The endocardium is smooth, thin, and transparent. The aortic valves are three in number. They are covered especially on their ventricular surface by masses of firm, pale-yellow, partly-calcified, cauliflower-like vegetations. The result is an almost complete aortic stenosis. The lumen of the aorta above the valves appears wider than normal. The wall is of normal thickness. The coronary arteries arise from the anterior and left posterior sinuses of Valsalva and appear grossly normal.

Lungs.—Both lungs are smaller than normal and similar in appearance. The pleura is purple in colour, and is thin and translucent. The lower lobes are collapsed and non-crepitant. The upper lobes are mostly air-containing. On section, the lower lobes are dark red in colour, in contrast to the brownish pink of the air-containing portions. Some œdema fluid exudes from the cut surface on squeezing. There is no consolidation. The bronchial mucosa is congested. The hilum lymph nodes are not enlarged.

Liver.—The liver weighs three pounds. It is enlarged and feels very firm. The capsule is smooth and very dark brown in colour. The gall-bladder is small. Its walls feel thick, soft, and œdematous. The cavity contains thin yellow bile and a fine sediment of black granular pigment stones. On section, the liver lobular pattern is distinct. The central parts of the lobules are dark brownish red in colour and run together to form the nutmeg pattern of chronic venous congestion. The peripheral parts are pale yellow. At many points throughout the liver substance, but especially just beneath the capsule, there are large irregular sharply demarcated areas which are very dark red and show no pattern. They vary in diameter from one to three centimetres, and some are confluent. They are quite firm and similar in consistency to the surrounding tissue. They appear to be hæmorrhagic infarcts.

Spleen.—The organ is enlarged, weighs one pound nine ounces, and feels very firm. The capsule is smooth and dark red in colour. At each pole there is a rough thickened white area, beneath which the splenic tissue is very hard. On section, these are seen to overlie irregularly - shaped yellow areas of infarction

with sharp margins. There are several other more recent infarcts which are greyish red in colour and hard. The remaining pulp is dark red and firm. The malpighian bodies are small and the trabeculæ prominent. The cut edge is straight.

Kidneys.—The left kidney weighs eight ounces. It is slightly enlarged and feels firm. The capsule is smooth and strips easily, leaving a smooth dark brown surface. On section, the cortex and medulla are even and sharply demarcated. At one point, however, there is a depression in the surface beneath which the cortex is deficient. The pyramids are dark reddish brown and congested. The pelvic mucosa is smooth and slightly injected. The ureter is normal. The right kidney is essentially similar to the left. There are no gross infarcts.

Adrenals.—These are not enlarged. They feel firm. On section, the cortex is two millimetres thick and light yellow in colour. The medulla is greyish brown. Both the glands are similar.

Bladder and prostate.—These show no lesion.

Alimentary tract.—The stomach mucosa is dark red and congested, especially at the pyloric end. The duodenal mucosa is also congested. The small and large bowel show no abnormality, apart from slight redness of the mucous coat.

Pancreas.—The pancreas is normal in size and is evenly firm. Its ducts are patent, and on section the acinar tissue is pink.

Neck organs.—The larynx, trachea, and œsophagus show no gross lesion. The thyroid gland is normal in size, soft, and dark brown in colour. On section, the acinar pattern is regular. The aorta is thin-walled and elastic. The intima is free from atheroma.

Bacteriology.

Cultures taken from the heart's blood and spleen were sterile.

Microscopical Examination.

Heart.—The subepicardial fat round the left coronary artery contains a small hæmorrhage. Scattered throughout the myocardium of both ventricles there are innumerable small infarcts of varying age. Some show groups of muscle fibres completely replaced by fibrous tissue. Other more recent ones consist of collections of lymphocytes and polymorphonuclear leucocytes lying among hydropic muscle fibres containing faintly staining nuclei. These are the so-called Bracht-Wächter bodies. A third type shows various stages of organisation. They consist of numerous newly-formed capillaries filled with red blood-cells in a loose fibroblastic connective tissue infiltrated with lymphocytes and large mononuclears. These are the red areas seen naked eye. Several small arterioles contain fibrin thrombi. There are no Aschoff bodies nor signs of healed rheumatism.

The mitral valve is normal. The aortic valve is covered by large irregular

masses of fibrin. The base of these vegetations consists of organising fibrous tissue, which is remarkably free from inflammatory cells. No organisms are seen in this section. The pulmonary valve presents a similar appearance. The valve itself is very much thicker than normal. It is composed of slightly œdematous fibrous tissue and contains no muscle fibres.

Lungs.—The pleura is not thickened. Throughout both lungs there are large areas of collapse of the alveoli. The septal walls lie close together with little or no space between. Adjacent areas of aerated alveoli show compensatory emphysema. A high proportion of the small arteries and arterioles contain recanalised thrombi. Hart's elastin and van Gieson's stain show these vessels to be made up of several small channels lined by endothelium and fibrous tissue inside a single internal elastic lamina. The majority of the thrombi are of considerable age, but one or two still contain unorganised fibrin.

Liver.—This shows chronic venous congestion and hæmorrhagic infarction. In the central zones of the lobules the sinusoids are dilated and the intervening liver cells thinned and atrophied. Some lobules show hæmorrhage round the central vein, and large mononuclear cells containing ingested iron pigment are present. In the infarcted areas the portal tracts and a few liver cells in their immediate vicinity have survived. The rest of the liver tissue is replaced by red blood corpuscles and Küpffer cells lying in a collapsed reticulum. Swollen nuclei of the remnants of bile ducts and central veins are still apparent, and there are many mononuclear phagocytic cells filled with iron pigment. Several branches of the portal vein in the infarcted area are occluded by organised thrombi, some of which are recanalised. These are obviously older than the infarcts.

Gall-bladder.—The muscle and mucous coats are widely separated by œdema fluid sparsely infiltrated with lymphocytes.

Spleen.—The pulp is congested and the sinusoidal endothelium prominent. There is an increase in fibrous tissue between the sinusoids. There are several large areas of infarction. These consist of central areas of structureless necrotic material with hæmorrhagic margins. Their age varies, and there are corresponding degrees of encapsulation by fibrous tissue. One contains much altered blood pigment, and there are many large mononuclear cells filled with hæmosiderin at the edges. Several trabecular veins near the infarcts contain organised and fibrinous thrombi.

Kidney.—A small area of recent infarction in one kidney shows the outlines of dead glomeruli and tubules surrounded by red blood-cells in the interstitial tissue. The corresponding occluded arteriole lies at the edge of the area and contains a mass of fibrin. An older infarct just beneath the capsule shows hyaline glomeruli surrounded by fibrous tissue infiltrated with lymphocytes. The capsule over this depressed scar is thickened by fibrous tissue. Glomerular capsules and tubules near the infarcts show pink-staining albuminous fluid in their lumina. In scattered glomeruli there are structureless infarcted capillary loops, and some show adhesions

between the glomerular tuft and Bowman's capsule. Many tubules, both convoluted and collecting, contain as well as albumen, clumps of polymorphonuclear leucocytes, desquamated epithelial cells, and red blood-cells from embolic lesions higher up the nephron. There are also some granular and hyaline casts. A few small arterioles contain fibrin thrombi, some of which are organised and recanalised.

Adrenals.—All blood-vessels are congested, and there is a small hæmorrhage in the peri-adrenal fat.

Stomach.—The mucosal capillaries are acutely congested.

Pancreas.—The islets of Langerhans are normal. At the periphery of the lobules the acinar cells are very small and atrophic, while in the centre round the islets they are quite normal. The vessels between the lobules are congested, and one or two arterioles contain fibrin thrombi. The ducts are normal. The pancreas shows the changes of chronic venous congestion.

The other organs show nothing of significance.

Anatomical Diagnosis :

Congenital morbus cordis; tetralogy of Fallot :

Subacute bacterial endocarditis aortic, pulmonary, and tricuspid valves :

Infarction of heart, liver, spleen, kidney :

Focal embolic nephritis :

Organised and recent fibrin thrombi in arteries of lungs, kidney, pancreas :

Organised and recent thrombi in branches of portal and radicles of splenic veins :

Chronic venous congestion lungs, liver, spleen, pancreas :

Bilateral hydrothorax, hydropericardium, ascites, subcutaneous œdema :

Atelectasis both lungs.

Commentary.

The case is an example of bacterial endocarditis associated with congenital anomalies of the heart. No blood cultures were made during life, and, as often happens, the cultures taken at post-mortem were sterile. There is little doubt, however, from the non-septic nature of the embolic lesions and from the age and character of the vegetations that the endocarditis is of the subacute bacterial variety. This is usually caused by an organism of low pathogenicity, such as the *streptococcus viridans*. Before such an organism can produce endocarditis, it must gain access to the bloodstream, and the heart-valve must be in a susceptible condition.

With regard to the first of these conditions, it has been shown that teeth extractions (Okell and Elliott, 1935), tonsillectomy, and even biting or chewing in the presence of pyorrhœa or apical tooth abscess are often accompanied by

transient bacteriæmia. The organisms concerned are the normal bacterial flora of the mouth, mostly the *viridans* and other non-virulent strains of *streptococcus,* and *hæmophilus parainfluenzæ*. They may require special methods of culture for their isolation. The organism and its source in this case are unknown.

The common predisposing condition of the heart-valves is healed or active rheumatic fever. The present case is an interesting example of the other, more rare, type of abnormality, namely a congenital defect in development. Both healthy and defective valves may be attacked by the ordinary pyogenic organisms, with the production of acute or malignant bacterial endocarditis.

The patient had suffered all his life from cyanosis and attacks of breathlessness on exertion. These are the cardinal symptoms of congenital heart disease. The lesions found in the heart were :—

1. Stenosis and hypoplasia of the pulmonary artery (with bicuspid pulmonary valve).
2. Patent interventricular septum.
3. Hypertrophy of the right ventricle.
4. Dextroposition of the aorta.

These findings constitute the classical tetralogy recognised by Fallot in 1888. It is one of the commonest forms of congenital disease of the heart.

The manner of development of the cardiac defect is as follows : At one stage the embryonic heart consists of one auricle, one ventricle, and the bulbus cordis. By a process of longitudinal septum formation in each of these cavities, the adult state of right and left auricle, right and left ventricle, and pulmonary artery and aorta respectively is attained. A spiral twisting of the bulbus through 180° also occurs, so that the pulmonary artery moves forward and to the right to arise from the right ventricle, and the aorta backwards and to the left to arise from the left ventricle. It will be readily seen that failure of one or other of the processes of septation and torsion can result in a wide range of abnormalities. In the present case torsion has occurred, so that the relative position of the great vessels is normal. There has, however, been a deviation of the bulbar septum to the right. The effects of this are threefold, namely, formation of a narrow pulmonary artery, with a wide dextroposed aorta, and failure of the bulbar septum to meet the ventricular septum. There is thus a gap in the upper part of the latter, and the aortic opening sits astride the defect. As a result of the pulmonary stenosis, there is a rise in pressure in the right ventricle, and dilation followed by hypertrophy of its muscle. This rise in pressure also helps to prevent the union of the ventricular and bulbar septa. Because of the communication between the ventricles, the pressure in each is the same, namely, that of the systemic circulation. It is not surprising, therefore, that the muscle of the right ventricle hypertrophied till it equalled that of the left.

There is a shunt of venous blood through the patent interventricular septum into the left ventricle. This, together with insufficient flow of oxygenated blood from

the lungs because of the pulmonary stenosis, results in cyanosis, which is present from birth. As a result of the decreased oxygen-saturation of the blood compensatory polycythæmia usually develops, with an increase in the average diameter of the red cells and an increased quantity of circulating hæmoglobin. The blood was not fully investigated in this case. Clubbing of the fingers and toes was present. This is a constant accompaniment of cyanosis due to congenital heart disease. It is related to the chronic venous congestion which occurs in the nail-beds, where normally the capillary circulation is very slow. It sometimes develops into hypertrophic pulmonary osteoarthropathy. There is often delayed physical development in these cases. This was only apparent in the absence of pubic hair at the age of sixteen, which might have been incidental. Congenital lesions are sometimes found in other organs than the heart. None were present in this case.

The average age at death of patients with the tetralogy of Fallot is 12 years, but they have been known to live a fairly normal life for sixty years. This patient's cardiac function was sufficient to enable him to live for fifteen years before signs of failure appeared. There seemed no reason why his heart condition, which had not appreciably hindered his physical development, should not have allowed him to live longer. The clue is found in the fact that his last illness was ushered in by an acute episode. Eight weeks before death he took a sudden severe crushing feeling in the chest with abdominal pain, followed by a feeling of weakness, after which he vomited frequently. This attack was probably a coronary occlusion produced by emboli from the heart-valves. The presence of large organising infarcts at the apex of the right ventricle supports this view.

The usual type of congenital lesion on which bacterial endocarditis develops is the bicuspid aortic valve. In this case the most profuse and therefore oldest vegetations are on the aortic valve, but it has three cusps. It is probable that the flow of blood through the patent interventricular septum disturbed the normal mechanics of closure of the valve. This allowed the deposition of platelet thrombi upon which, according to Grant's work (1928), circulating bacteria settle and produce the vegetations. Once established on the aortic valve, the same process took place on the fleshy, mechanically imperfect bicuspid pulmonary valves. The vegetations on the tricuspid valve are due to direct implantation from the anterior aortic cusp through the patent interventricular septum. The absence of pyrexia, of positive cultures, and of demonstrable organisms in sections of the valves indicate that the disease was in an abacterial phase. Such phases have been shown to occur by Libman.

Clinically, the changing character of the cardiac murmurs, the enlarged spleen at so early a stage of cardiac failure, the coronary attack, and the petechiæ on the soft palate, were all suggestive of endocarditis with embolic lesions. It is probable that the attacks of vertigo were due to pieces of vegetations entering the cerebral circulation, resulting in small infarcts. The brain was not examined.

The cough which developed is a common accompaniment of congestive heart failure. It is due to fluid accumulating in the congested bronchi.

He complained of difficulty in swallowing. This may have resulted from pressure on the œsophagus by the enlarged right chambers of the heart and the hydropericardium. The presence of a slight degree of heart block indicates that the conduction system was involved at some point by an infarct.

The absence of infarcts in the lungs is explained by the age of the thrombi in the vessels. The fact that most of the emboli are organised and recanalised indicates that they entered the pulmonary circulation at a time when there was no chronic venous congestion of the lungs, which is necessary before infarction can take place. These lesions in the lung vessels may have helped to accentuate the cyanosis by cutting down the vascular bed.

The infarcts in the heart, spleen, and kidneys, and the focal embolic nephritis are expected results of vegetative endocarditis. The lesions are not septic because the organisms are bathed in the bloodstream by immune bodies in high titre, which develop during the long-continued infection.

The presence of organised and unorganised thrombi in radicles of the splenic vein and of organised thrombi in branches of the portal vein is more difficult to interpret. The thrombi in the spleen are near the infarcted areas. It is probable that, as a result of the infarction and the venous congestion, venous thrombosis due to stasis occurred. A part of this clot in the splenic vein radicle, on breaking off, would enter the portal circulation and impact in a branch of the portal vein in the liver. This occludes one of the liver's sources of blood and, aided by the venous congestion, lays it open to infarction by emboli entering through the hepatic artery. This has probably been the sequence of events. Infarction of the liver is comparatively rare and, as in this case, is nearly always hæmorrhagic. It is comparable to infarction in the lung.

The profuse growth of vegetations on the aortic valve resulted in a virtual aortic stenosis, accentuating the systolic murmur and thrill of the pulmonary stenosis. The myocardium, weakened by multiple infarcts, could not overcome this mechanical obstruction, and heart failure set in. Because of the communication between the two ventricles, the failure was mainly right-sided. There was some œdema of the lungs, but the terminal picture was one of systemic chronic venous congestion. Transudation of fluid of low protein content through the walls of anoxæmic capillaries resulted in œdema and accumulation of fluid in the serous cavities. The fluid in the pleural sacs pressed on the lungs, causing widespread collapse of alveoli.

An interesting result of the chronic venous congestion is seen in the pancreas, an organ which is rarely affected. The islets of Langerhans and adjacent acini are quite normal, while the cells of the acini at the periphery of the lobules are small and atrophic. By analogy with the liver, the islets represent the centre of the physiological lobule, and lie at the arterial end of the terminal capillaries like the cells round the portal tracts. The atrophic cells at the outside are at the venous end of the capillaries at the periphery of the physiological lobule, like the cells round the central veins in the liver.

In summary, the case presents an interesting maldevelopment of the heart, upon which is superimposed a subacute bacterial endocarditis. Multiple recanalised thrombi in the lung vessels, infarcts in the liver, and chronic venous congestion of the pancreas were unusual features among the pathological findings.

T. G. M.

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REVIEW

DISEASES OF THE NERVOUS SYSTEM, described for Students and Practitioners. By F. M. R. Walshe, O.B.E., M.D., D.Sc., F.R.C.P. Third Edition. E. & S. Livingstone. 15s.

IN his preface the author modestly claims that "the demand for a third edition of this book within three years of its first appearance may perhaps be taken to indicate the continued favour with which it has been received by the circle of readers for whom it is intended: namely that of a selective presentation of the elements of clinical neurology, rather than that of a complete precis of the subject or an exhaustive work of reference." He adds that he has declined suggestions to "include glossaries of eponymous titles and of technical terms, bibliographies at the ends of chapters and brief accounts of rare diseases." The present reviewer inclines to wish that Dr. Walshe had sometimes dipped a little more deeply into the vast reservoir of his neurological learning and experience, but in this short compass of 338 pages he has given the student the essentials, the known facts, and the budding neurologist the foundation on which to build his own structure. These facts are presented in crisp, short, simple sentences without a redundant word, but older readers will perhaps miss the less restrained pen of F. M. R. W., who wrote neurological criticisms in "Medical Science Abstracts and Reviews."

Welcome additions to the third edition are brief new sections on ocular movements, the pituitary hypothalmic complex, infantile hemiplegia, sinus thrombosis, and acute poliomyelitis.

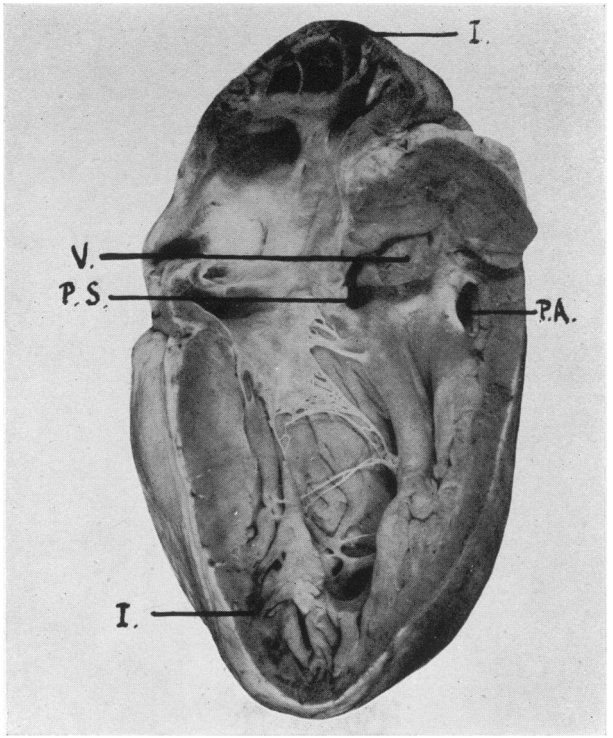

FIG. 1

Heart, right side. P.A., pulmonary artery. P.S., patent septum through which protrude vegetations, V, on aortic valve. I., infarcts.

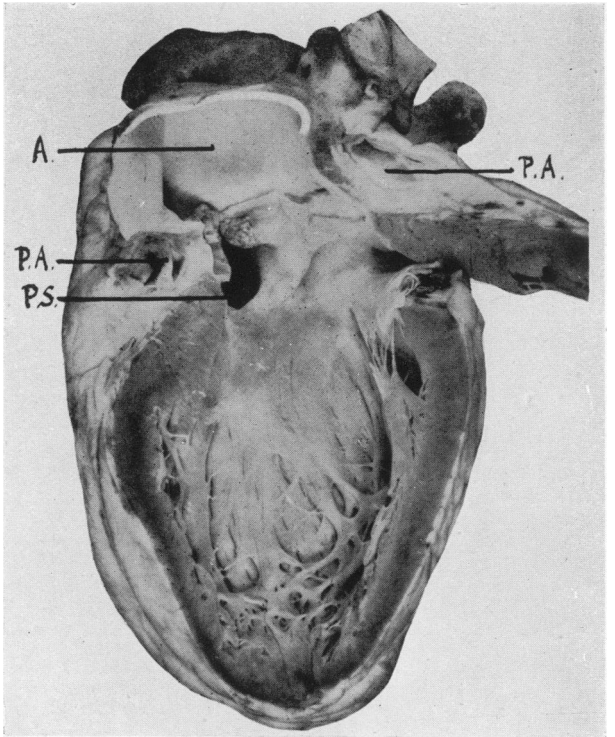

FIG. 2

Heart, left side. Note wide aorta, A., with vegetations on aortic valves; patent septum, P.S.; and narrowed pulmonary artery, P.A., cut across, showing valve cusp.

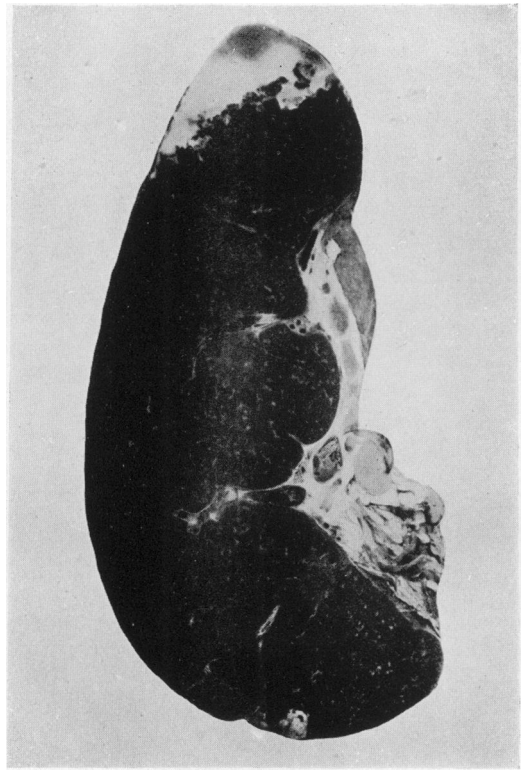

FIG. 3
Spleen, showing healed infarcts at both poles.

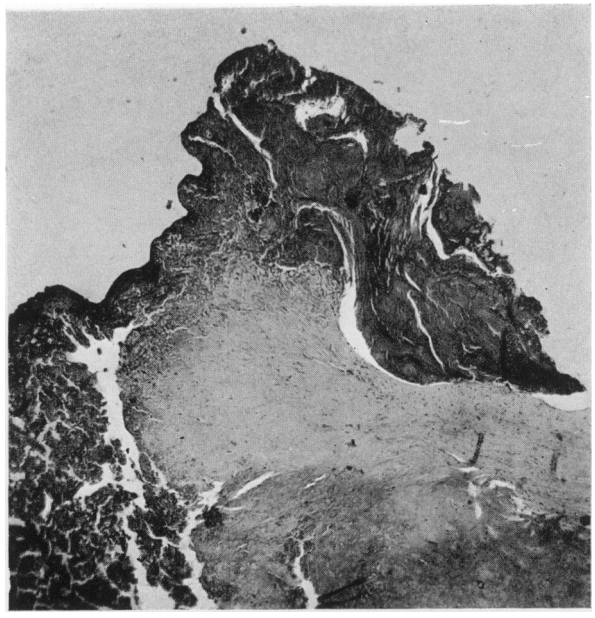

FIG. 4
Vegetations on aortic valve. Note fibrous tissue growing into the base of the fibrin. H.E., X35.

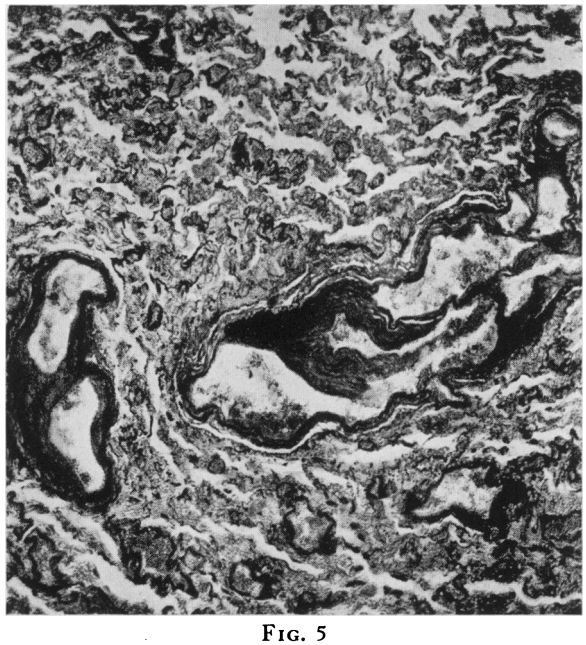

FIG. 5
Lung.—Recanalised arteries showing multiple channels inside a single internal elastic lamina. Note collapse of surrounding alveoli. Hart—van Gieson, X70.

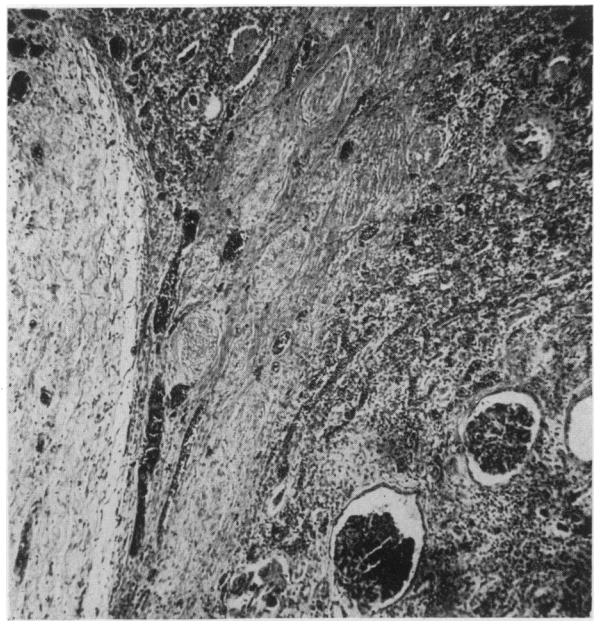

FIG. 6

Kidney, showing healed infarct. Note outlines of glomeruli in fibrous scar, lymphocytic infiltration, congestion of capillaries, and fibrous thickening of capsule. H.E., X70.

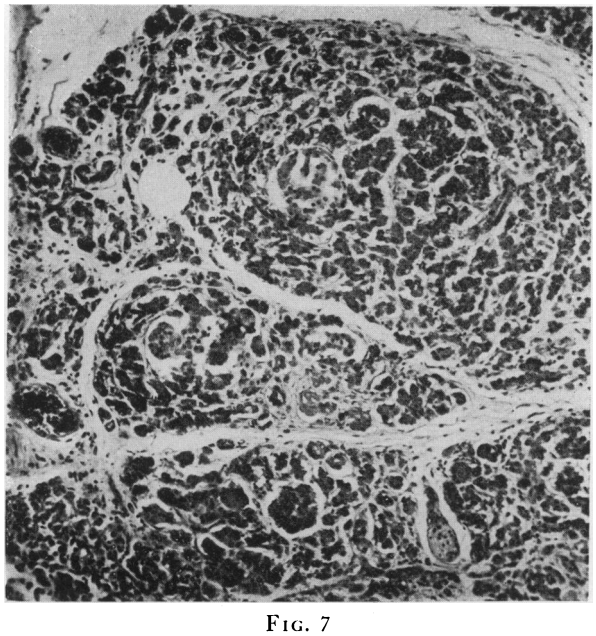

FIG. 7

Chronic venous congestion of pancreas. Note small atrophic acini at periphery of lobules, normal acini round central islets of Langerhans. H.E., X90.

Photography by Mr. D. McA. Mehaffey.

In summary, the case presents an interesting maldevelopment of the heart, upon which is superimposed a subacute bacterial endocarditis. Multiple recanalised thrombi in the lung vessels, infarcts in the liver, and chronic venous congestion of the pancreas were unusual features among the pathological findings.

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Studies from the Institute of Pathology

CASE XIII (A3801).

PRIMARY CARCINOMA OF PELVIC COLON

Clinical History.

The patient was a man aged 53. His previous history contained nothing of importance.

On admission to hospital, he gave a history of having had "a pleurisy" about two months previously, and complained that for the past six weeks he had been off work because of a very bad cough, weakness, and breathlessness. When questioned about his general health, he said that his appetite was poor, he did not sleep well, and his bowels were rather irregular: he also said he thought he had been losing weight.

He was a thin, anxious-looking man, sitting propped up in bed, markedly cyanosed, and unable to talk much because of dyspnœa: he had a troublesome cough, but very little sputum. There was no clubbing of the fingers. He complained of pain at the lower border of the right scapula, and, on examination, a pleural rub was audible there. The chest expansion was poor on both sides, and the breathing bronchial.

The abdomen was distended and free fluid was present: the liver was slightly enlarged: the tongue was coated but moist.

Examination of the other systems revealed nothing of importance.

X-ray examination of the chest showed diffuse mottling of the whole of both lung-fields, and from this two diagnoses were suggested: bilateral tuberculosis, or extensive secondary metastases.

The sputum contained pus-cells and mononuclears, and on culture, staphylococcus aureus, streptococcus viridans, and a few pneumococci were grown.

Search was made for a primary cancer, but was unsuccessful.

His condition deteriorated, respiratory symptoms and general weakness predominating, and on the twenty-second day after admission he died.

Post-Mortem.

The body is that of a poorly-nourished middle-aged man. The abdomen is distended: there is no œdema of the sacrum or lower limbs: no jaundice. Superficial lymph-glands are palpable in the left supra-clavicular fossa and on both sides of the neck.

Body cavities.—There are adhesions in both pleural cavities. The pericardial sac contains about one ounce of clear fluid. The peritoneal cavity contains about

one and a half pints of clear straw-coloured fluid, and the large intestine is distended.

Heart weighs eleven ounces. The epicardium is smooth. On opening the heart, the endocardium is smooth and glistening. The auricles are normal in size, and there are no thrombi. The right ventricle is normal, but there is slight hypertrophy of the left ventricle. The muscle appears healthy. The valvular orifices are normal in size, and the cusps thin and competent. There is moderate atheroma of the aortic wall, but this does not involve the orifices of the coronaries, which are of normal patency.

Lungs.—Both are similar. Apart from some fibrous adhesions, the pleura is smooth, and through it the underlying brownish red lung-tissue can be seen, but for the most part this is replaced by white areas varying in size from 1 mm. to 2 cm. in diameter. In some instances the larger areas can be seen to be due to a confluence of the smaller ones, which are scattered profusely over the lung surface. The lung feels heavier than normal, and the white areas are palpable as firm nodules. The bronchial glands are enlarged and infiltrated by a similar whitish tissue, which shows also some areas of anthracosis. The bronchi are full of mucoid material and their lining is rugose and congested. The cut surface of the lung is studded with firm white nodules similar to those seen on the pleural surface, but some show necrosis. They are surrounded by zones of emphysema. In the remaining lung-tissue the alveolar pattern is visible, but there is œdema, and a fine frothy fluid exudes on pressure.

Liver weighs five pounds. The capsule is smooth, and through it, in the underlying pinkish grey liver-tissue, numerous circular whitish areas, varying from $\frac{1}{2}$ to 2 cm. in diameter, can be seen. The edges of these are raised above the surrounding surface, and they have a marked central depression. On section, the liver-tissue is moderately congested. The lobular pattern is clear, and the portal tracts and bile ducts appear normal. Scattered through the liver substance are white nodules, several of which correspond to those seen through the capsule, the largest being approximately 2.5 cm. in diameter. They are surrounded by a zone of hyperæmia and show hæmorrhagic and necrotic-looking areas.

Gall-bladder.—This shows no lesions. The common bile duct is patent.

Spleen weighs six ounces. The capsule is smooth and, on section, the malpighian bodies are well seen against the dark red pulp.

Pancreas and stomach.—These present no abnormalities.

Kidneys.—Both are normal in size. The capsule is not thickened and strips easily, leaving a smooth surface. The cortex and medulla are of normal relative width, and the cortical striæ are well seen. The pelvis and ureters are normal.

Bladder and prostate show no lesions.

Right adrenal.—This is normal in size. It contains a white opaque nodule 0.5

cm. in diameter. Apart from loss of cortical lipoid, the remaining adrenal tissue appears normal.

Left adrenal is similar and contains a smaller secondary.

Intestine.—The whole of the intestine shows congestion, and the large bowel is distended. At the upper limit of the pelvic colon there is a firm irregular mass, 3½ by 2½ in., arising from the bowel wall and projecting through its coats, to become adherent to a dense mass of enlarged and infiltrated lymph-glands and to surrounding structures. On opening the bowel, the growth is seen to involve only about two-thirds of the circumference of the wall, though it extends inwards as a large irregular mass, causing marked reduction of the lumen. The mucosa over it has a dense white appearance, but there is no obvious ulceration. The colon proximal to the growth is dilated and slightly hypertrophied.

Neck organs.—These are normal, but are fixed by enlarged lymph-glands, which, on section, are seen to be infiltrated extensively by tumour growth.

Aorta.—There is slight loss of elasticity, and there are a few small atheromatous plaques.

HISTOLOGY.

Heart shows no lesions.

Lungs.—Both are similar. Much of the lung-tissue is replaced by solid masses of cells with a pink ill-defined cytoplasm, containing large vacuolated oval nuclei with bluish granules and a clear blue limiting membrane. Some are undergoing mitosis. In some places these cells show an acinar arrangement; in other fields they are less clearly differentiated and there are areas of necrosis. Several of the veins and one or two arteries are seen to contain tumour emboli. Many of the lymphatics, especially those of sub-pleural distribution, are distended with tumour-cells. In comparison to the areas of tumour deposit, there is relatively little remaining lung-tissue. In it two changes are seen: (1) In some fields there is marked congestion of the alveolar walls and the air spaces contain a pink exudate, in which are a few leucocytes and red blood-cells. (2) In others there is a well-marked emphysema, the clubbed ends of the broken alveolar walls being clearly seen.

Liver.—There is congestion of the central hepatic veins spreading out along the sinusoids into the adjacent liver-cells, which show slight granular changes. Near the periphery of the lobule the cells are normal. Several metastases are seen, the cells resembling those described in the lung in type and arrangement. They are seen to invade the surrounding liver-tissue, which is congested and compressed. Several branches of the portal veins contain tumour emboli.

Spleen.—Presents no abnormality.

Pancreas.—The acinar and islet tissues are normal. There is slight thickening of the walls of the smaller arterioles.

Kidneys.—Both are similar. The capsule is not thickened, and the glomeruli, tubules, and interstitial tissue are normal.

Adrenals.—The right adrenal contains a fairly large secondary, which has invaded the central vein and produced partial thrombosis. The remaining adrenal tissue is normal, apart from compression round the periphery of the growth. There is slight increase in the thickness of the arteriolar walls. The left adrenal contains a smaller secondary.

Section from primary growth in pelvic colon.—There is a rapid transition from relatively normal to a very hyperplastic mucosa in which the acinar formation is less clear, and the cells are larger, almost filling the lumen of the glands, and having a pale pink vacuolated cytoplasm containing a dark blue granular nucleus, which shows mitoses in some instances. Round these pesudo-glandular structures small foci of inflammatory cells are seen, but there is no actual ulceration. In the deeper layers the cells are less well differentiated, and are seen to have invaded and replaced the muscle coats, reaching the peritoneal surface. Areas of necrosis are also seen. Here again there is evidence of lymphatic and venous permeation.

Lymph-glands from para-aortic and cervical groups.—These show extensive secondary infiltration.

Thyroid.—Shows no lesions.

Aorta.—There is moderate atheromatous thickening of the intima, and the underlying media shows slight fragmentation.

Anatomical Diagnosis.

Adeno-carcinoma of pelvic colon:

Extensive secondary invasion of both lungs:

Metastases to liver, both adrenals, para-aortic, hilum, and cervical lymph-glands.

Commentary.

This case combines a good illustration of the various mechanisms of spread of carcinoma with a sufficiently unusual clinical course to merit discussion.

The presenting symptoms and signs were all due to the secondary deposits in the lung, and greatly overshadowed those which, in the light of the post-mortem findings, are attributable to the primary growth in the pelvic colon, but which were never typical, and gave no indication of its actual situation, being confined to the history of anæmia, loss of weight, and irregularity of bowel habits, and the finding of ascites and enlargement of the liver. Owing to its situation, the tumour was not palpable either through the abdominal muscles or per rectum.

While it is not unknown for a carcinoma of the pelvic colon to remain latent till manifestations of spread occur, it is very much more usual to find that the patient complains of such symptoms as abdominal pain or discomfort, often aggravated

during defæcation, or of obvious alterations in the regularity and type of motions passed, or of the appearance of blood in the stools, or even to find a definite obstruction of the gut developing before metastases have occurred, or while they are confined to the regional lymphatic glands.

During this patient's twenty-two days in hospital, the bowels acted once or twice per day with only two exceptions, and nothing abnormal was noticed either by the patient or the ward staff. The explanation appears to be that the growth, though extensive, did not completely encircle the bowel wall, and therefore part at least of the peristaltic wave was transmissible and capable of propelling fæces through the narrowed lumen. That some effort was required to do this is shown by the slight hypertrophy of the bowel wall proximal to the growth. The fact that the change is only slight shows that there was relatively little obstruction, and accounts for the lack of pain or abdominal discomfort. The absence of macroscopic blood from the stools is due to the fact that there was no actual ulceration of the growth.

With the exception of those in the lungs, the metastases in other organs gave little indication of their presence. While those in the liver may have played a part in the production of the ascites, the extension of the primary growth to the peritoneum and its marked involvement of lymphatic glands would have been sufficient to account for it. Those in the adrenal, though bilateral, left sufficient functional tissue to prevent symptoms of adrenal insufficiency, and indeed even where replacement of the adrenal glands is very gross, the onset of Addison's disease is rare. The atheroma of the aorta was not extensive and does not appear to have had any appreciable effect. The slight thickening of the arterioles seen in the pancreas and kidneys was not more marked than one would expect at this age.

Death was largely due to lack of functional lung-tissue as a direct result of its replacement by secondary deposits.

The histology shows the tumour to be a fairly well differentiated adenocarcinoma, the metastases producing the primary arrangement and maintaining some degree of acinar structure in their less anaplastic and necrotic areas.

From the pathological point of view, the most interesting feature is the illustration of the various methods of spread of cancer. The primary growth was in the area drained by the portal system, and there seems little doubt that this was the way in which the liver was invaded. From here the tumour-cells could pass to the lung by way of the hepatic veins, inferior vena cava, right side of heart, and pulmonary arteries. Willis found that of forty-nine tumours in the portal area producing hepatic metastases, twenty-one had also invaded the lungs, as against forty-three similarly placed neoplasms without hepatic secondaries, in which invasion of the lungs was found in only five cases. From the lungs tumour emboli would next gain access to the left heart via the pulmonary veins, and thus enter the systemic circulation to give rise to the adrenal deposits. In support of the hæmatogenous method of spread is the finding of venous channels in the primary

growth, liver, and lungs, containing tumour-cells. In the lungs these were also seen in the arteries.

On the other hand, the earliest spread of bowel cancer is to the intra-mural lymphatics and then to the regional glands. Lymphatic involvement was a very marked feature in this case, and in view of the multiplicity of the secondary nodules in the lungs, relative to the involvement of the liver, the possibility must be considered that the lung deposits were due to spread along the thoracic duct to its termination in the innominate vein, and thence through the right heart to the lungs. Weigert (1880), Hillier (1903), Schwedenburg (1905), and others all record cases in which invasion of the thoracic duct occurred with carcinoma of the large intestine.

The glands in the left supra-clavicular fossa were also enlarged. Troisier (1889) reviewed a series of cases of abdominal carcinoma with enlargement of these glands, and he associated this with the close relationship existing between these glands and the thoracic duct, but it seems more likely in this case that the involvement of this group, in common with the hilum and cervical glands, was the result of spread from the lung. In confirmation of this method of spread is the presence of lymph channels distended with tumour-cells in the primary growth and in the lungs, and the great number of glands replaced by tumour tissue.

One of the most striking features is the extent of the lung invasion, which is very much greater than is usual in this type of case, and it is suggested that this is due to the multiplicity of methods of spread, secondary deposits being set up both by way of the venous drainage of the affected parts of the liver, and directly from the primary growth via the thoracic duct, and that these secondary deposits themselves gave rise to tertiary ones by (1) lymphatic-spread, (2) air-spread, and (3) invasion of pulmonary veins and possibly re-entry to the lungs in the bronchial arteries. In support of the latter is the fact that, as previously mentioned, in the lungs both veins and arteries were seen to contain tumour-cells. With regard to the air-spread, though no invasion of bronchi was actually seen, the alveolar involvement was so extensive as to render this method of dissemination almost inevitable.

To summarise, a case of adeno-carcinoma of the large intestine is described, having an unusual clinical course, showing extensive metastases in both lungs, and also hepatic and bilateral adrenal deposits, and illustrating blood, lymphatic, and air spread.

Y. M.

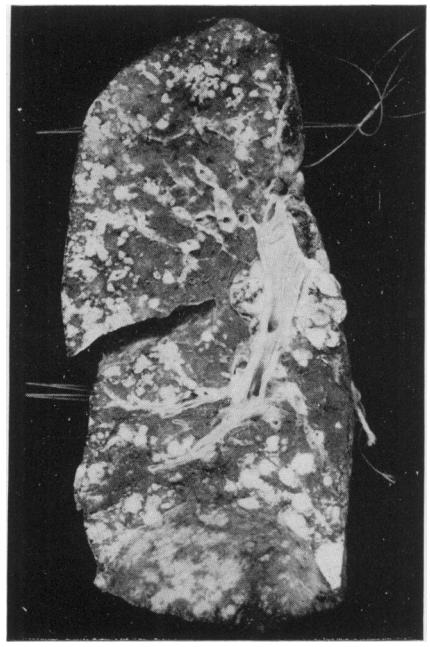

FIG. 1
To show the diffuse distribution of secondary nodules in the lung.

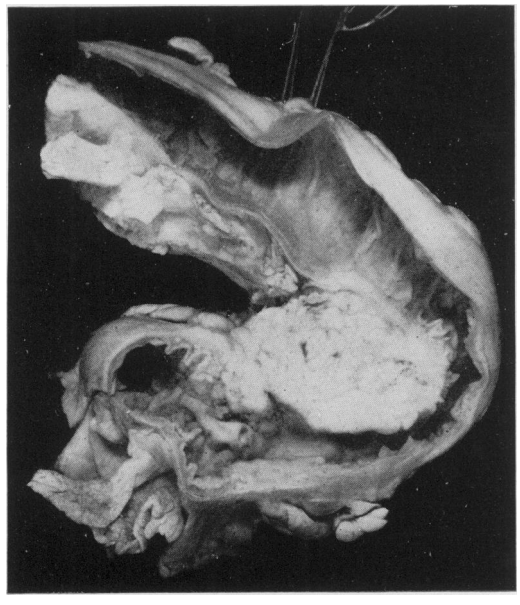

FIG. 2
To show the primary growth in the colon. Note the infiltration of the peri-colonic tissue, and that the whole circumference of the gut is not involved.

FIG. 3
Liver.—To show the secondary deposits.
Note their paucity relative to the lung.

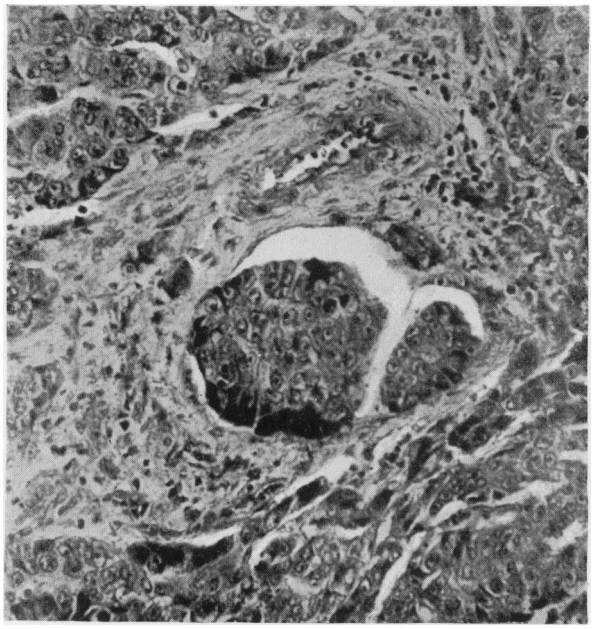

FIG. 4
Section of metastasis in liver, showing involvement of a portal venous radical.

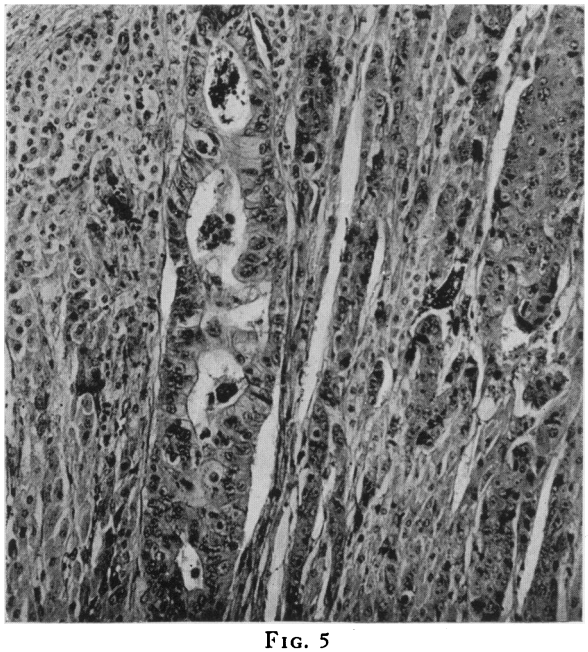

FIG. 5
Section of adrenal cortex, showing secondary deposits lying parallel to the zona fasciculata. The adeno-carcinomatous structure is more apparent than in other areas. The pattern of these early metastases seems to result from filling of the cortical sinusoids by the tumour-cells.

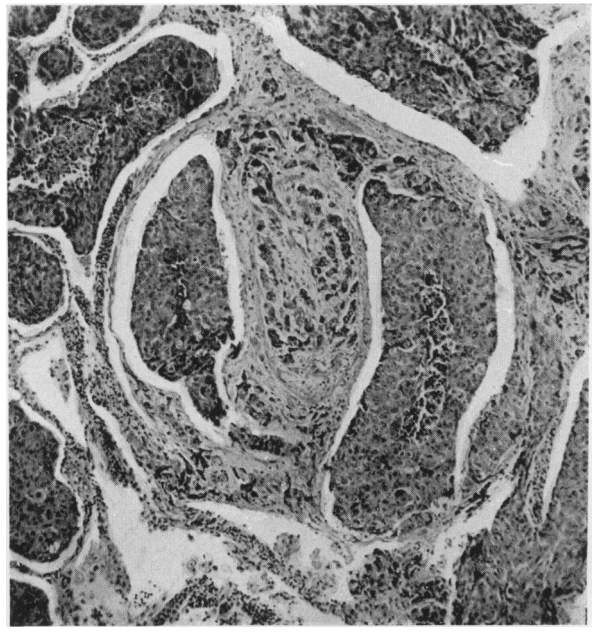

FIG. 6

Figure shows a secondary deposit in the lung. There is invasion with almost complete occlusion of a branch of the pulmonary vein, whilst the peri-vascular lymphatics are widely distended by tumour-cells.

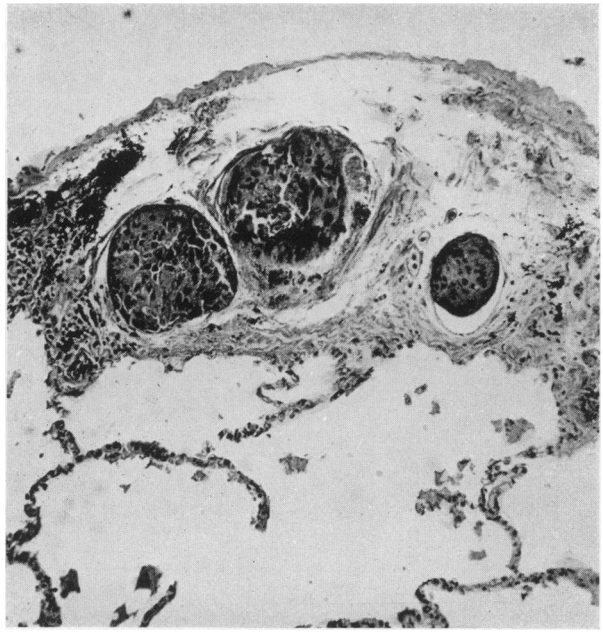

FIG. 7

To show the distention of the pleural lymphatics by the tumour-cells.

Photography by Mr. D. McA. Mehaffey.

Pink Disease

By JAMES M. GARVIN, B.A., M.B.

House Physician, Belfast Hospital for Sick Children

MUCH has been written in recent years about the cause and origin of Pink Disease (Erythrodema Polyneuritica). It is only within the last twenty years that the condition has been recognised. It was thought to be a nutritional disorder due to lack of vitamin B, a variation of this being that it was due to lack of absorption of vitamin B. Later it was thought to be due to a virus and to have a slight degree of infectivity about it. A brief outline of the pathology is that there is a demyelinisation of the peripheral nerves. Secondly, there is a small round-celled infiltration of the spinal cord; and thirdly, the skin changes which are hyperæmia and hyperkeratosis.

In this article I want to present six cases. The first two will be written in full, and illustrate the possibility of the infectivity of the disease. The other four cases will be used in a very brief form to illustrate special points, firstly about the danger of intercurrent infection, and secondly the most successful way to treat these cases.

The first two cases were two cousins who, although living about thirty miles apart, were occasionally in contact with each other.

The first child was a boy aged eleven months just beginning to creep around the floor. He was always perfectly healthy up to this, and was on the heavy rather than the light side. He was breast-fed until nine and a half months old, and then gradually weaned. In this case the first sign was the photophobia. He had a marked loss of appetite, and eventually when he refused everything he had to be force-fed for six weeks. His hands and feet were pale, puffy, and pink. He was restless, irritable, and very difficult to nurse. There was a red macular rash, which was followed by desquamation on the hands and feet. The child had profuse sweating, especially about the head, and the sweating seemed to make the rash itchy. His temperature occasionally rose to 101° or 102°. His pulse was fast. There was considerable hypotonia, with a very definite loss of weight. Insomnia was a prominent sign, and sedatives such as chloral and bromide were useless. When he slept it was usually on his face with his knees drawn up. He was always thirsty, and his facial expression was that of misery.

The second child was aged seven months, and he differed from Case I as follows: He had no photophobia whatsoever. His rash was more marked and seemed very itchy. His head was frequently retracted, and he had the characteristic arching of his back. There was a trace of albumen in his urine.

The most important part of the treatment of these two cases was good nursing at home. They were treated with all the vitamins, but vitamin B was not given until the third month, when a marked improvement was noticed. It was about five months until these two children were back to normal. The recommended treatment will be mentioned in the last two cases. The question about these two

cases is, Was one infected from the other? I believe this to be the case. There was no family history of the condition having occurred before, and both children were very well looked after. There was no deficiency in their diet, but I think it was due to the child not being able to absorb the vitamin B that the condition arose. Next, I want to stress the importance of intercurrent infection. A child usually has Pink Disease between the ages of six months to two years. The younger they are, the worse the prognosis.

Case III was a girl aged five months weighing 9½ lb. She was brought up to the extern department with a morbilliform rash. The eyes and nose had been running, and the child was thought to be recovering from measles. The child, however, became restless, and was brought back again a few days later. This time the mother seemed rather over-anxious. About three or four days later the characteristic signs of Pink Disease developed. The mother seemed very capable, so in view of the chance of infection in hospital, it was decided to let the mother nurse the child at home. She was given Betaxan injections; 1 c.c. on alternate days, but a week later the child returned having lost 1 lb. in weight. She had a temperature of 105°, with a fairly severe whooping-cough. The child was removed to the Fever Hospital, where she died four days later.

Case IV was a child aged seven months who had a typical history of Pink Disease. The rash, however, was more marked than usual and became infected. It was admitted to hospital with a temperature of 101.4°. The child became gradually worse, with the temperature steadily going up. On the second night the temperature had reached 107.6°. The child was simply tearing itself, and had to have splints applied. Sulphapyridine had no effect on the temperature, and the child went into a convulsion and died that night.

Cases III and IV demonstrate how fatal the disease becomes once intercurrent infection has set in. This makes one wonder where a case of Pink Disease should be treated, in hospital or at home. The answer to this question depends on the home conditions of the child. If it is from a good home, the child should be treated at home under the family doctor. If the home conditions are not good, the child will have a better chance in hospital, especially if the ward is divided into cubicles.

Case V was a girl aged ten months with the usual signs of Pink Disease. Her mother was a very capable person and took endless trouble with the child. She lived quite near hospital, and being in the summer, she was brought up on alternate days and kept out in the open air as much as the weather would allow. She was given 1 c.c. injections of Betaxan on alternate days, with one Aluzyme tablet three times a day. The restlessness was controlled with Soneryl 0.075 gm. six-hourly. Under this treatment the child recovered in about two and a half months.

Case VI was the most successful of all. The child was not from a very good home, and so it was admitted to hospital and nursed in a cubicle, with the cot lined with pillows to prevent unnecessary draughts and to keep the child from injuring itself against the sides of the cot. Silk was worn next to its skin to prevent irritation. He was a boy aged 1 year and 10 months who had been ill for about two weeks. He had the characteristic signs of Pink Disease, and was very ill.

His treatment consisted of (1) one tablet of Aluzyme three times a day, later increased to two tablets three times a day; (2) daily injections of 1 c.c. of Betaxan; (3) 50 mg. of ascorbic acid twice daily; (4) five minims of Adexolin t.i.d. In this case the restlessness was again controlled with Soneryl six-hourly. The child did not show much improvement for the first week, but after this the change was very marked. He was discharged from hospital a month later, fit and well, having been ill for six and a half weeks.

I am indebted to Dr. F. M. B. Allen for permission to publish details of four of these cases.

REVIEWS

PSYCHOLOGICAL MEDICINE. By Desmond Curran, M.B., F.R.C.P., D.P.M., and Eric Guttmann, M.D., L.R.C.P.Edin. E. & S. Livingstone, 16-17 Teviot Place, Edinburgh. 10s. 6d.

In the vast amount of literature which has accumulated on this subject, it is almost essential to have a short introduction. Such a book should have separated the wheat from the chaff, and there should only be included the things which have come to stay. This publication fulfils these criteria fairly well. It is short, 182 pages, but no essential feature is forgotten. The foreword is written by Dr. J. J. Conybeare, who stresses the authors' point to seek "positive psychiatric evidence" earlier in the diagnosis, and not to delay until "all possible physical causes have been excluded."

Chapters on ætiology and symptomatology of mental disease are followed by an important contribution on psychiatric case-taking. This is good, and shows the help obtainable by a properly taken history. The chapter on treatment is not so full, but most of the lines of treatment are mentioned. Minute details of all treatments are naturally not given.

Constitutional anomalies occupy a section in which intelligence tests are discussed, while the contribution on "organic syndromes" includes delirious states, Korsakoff's syndrome, organic dementias, and mental symptoms associated with vascular diseases.

One of the important features of this volume is the appendix on war-time psychiatry. The special needs of war examination, war clinical syndromes, psychiatric aspects of head injuries and treatment, are all included. This book may be recommended with confidence.

PATHOLOGICAL HISTOLOGY. By R. F. Ogilvie, M.D., F.R.C.P., with foreword by A. Murray Drennan, M.D., F.R.C.P., Professor of Pathology, Edinburgh University; and 235 Photomicrographs in colour by T. C. Douds. Pp. 411 + xi. Second Edition. Price 32/6.

The early appearance of the second edition is evidence of the popularity which this book has gained amongst students. The number of illustrations has been increased, whilst the quality of some of those in the previous edition has been improved. There are eighty additional pages of textual matter, which include a chapter on the Integumentary System.

The high standard of the original coloured photographs and of their reproduction will continue to render this book of inestimable value to students in their histological studies. There is no other students' atlas so valuable. We feel, however, that if the atlas character of the book were to be expanded at the expense of the text, it would be even more valuable. The mediocre student especially is tempted to use the book as a text-book, rather than as the author intends, as a companion to a text-book. In doing so, he gains a point of view which is too exclusively anatomical.

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The chapter on the Integumentary System deals only with two lesions—Molluscum contagiosum and lupus vulgaris. No mention or illustration is given of the common medial necrosis of the aorta described by Erdheim.

However, these are minor criticisms, and we feel sure that this edition will continue to hold the high place in the students' esteem which was gained by its predecessor.

Once again the publishers are to be congratulated on the manner in which they have overcome the difficulties of war-time production.

THE ESSENTIALS OF MODERN SURGERY. Edited by R. M. Handfield-Jones, M.C., M.S., F.R.C.S., and A. E. Porritt, M.A., M.Ch., F.R.C.S. Second Edition. Published by E. & S. Livingstone. 40s.

On the whole, this volume fulfils the requirements of its title adequately, and includes ear, nose, throat, and gynæcological conditions, but not those of the eye. There are also sections on anæsthetics and venereal diseases, although there may be some doubt as to the necessity of including these in a strictly surgical work.

There are a few unsatisfactory statements, such as the description of fluctuation on page 23, and in the description of crush injuries it is advised that every effort be made to overcome diminishing renal function. More practical advice seems called for in a work of this kind.

The suggestion of lumbar ganglionectomy in the treatment of senile gangrene would not be approved by many.

In the section on surgical technique, the dictum that no operation should be undertaken by any surgeon unless he is capable of meeting, with skill and dexterity, any complication, however unforeseen, that may occur, is one too often forgotten, and deserves the emphasis laid upon it.

In the section on colloid goitre, the treatment advised is relief of pressure, improvement of the patient's appearance, and prevention of thyrotoxicosis. Here again, one would like more practical information as to how these desirable objects are to be obtained.

In essentials, however, this book is so good that such inconsistencies, easily remedied, strike a jarring note.

"THE MEDICAL ANNUAL," 1943. Edited by Sir Henry Tidy, K.B.E., M.D., F.R.C.P., and A. Rendle Short, M.D., B.S., F.R.C.S. John Wright, Bristol. 25s. net.

"Of making many books there is no end; and much study is a weariness of the flesh." The author of these words had never seen the Index Medicus, which has so amply justified his statements. Year by year "The Medical Annual" tries to alleviate our weariness by giving us an epitome of all that is best in the medical literature of the year. The names of the editors and the list of erudite contributors are a sufficient guarantee of the breadth of their researches and their ability to place their results clearly before us. It would be invidious to attempt to assess the comparative value of the contributions (all of which may be described as worthy of the names of the editors), but a barrister's article on Legal Decisions may be specially mentioned. The present reviewer remembers a country doctor who for over fifty years read only one medical book each year; it was "The Medical Annual," and his marginal annotation showed how thoroughly he performed his task. He had an amazing knowledge of the trends of medical and surgical progress, and he lived to the age of ninety-seven! This reviewer does not prescribe "The Medical Annual" as a guarantee of longevity, but it may be regarded as a valuable adjuvant.

FRACTURES AND JOINT INJURIES. By R. Watson-Jones, B.Sc., M.Ch.Orth., F.R.C.S. E. & S. Livingstone, Edinburgh. Complete in two volumes, 75s.

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