NOVEMBER, 1952

THE ULSTER MEDICAL JOURNAL

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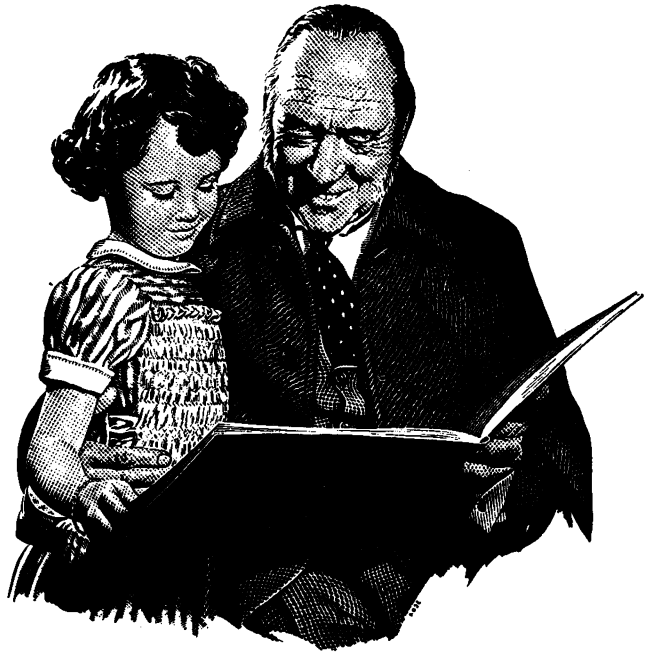

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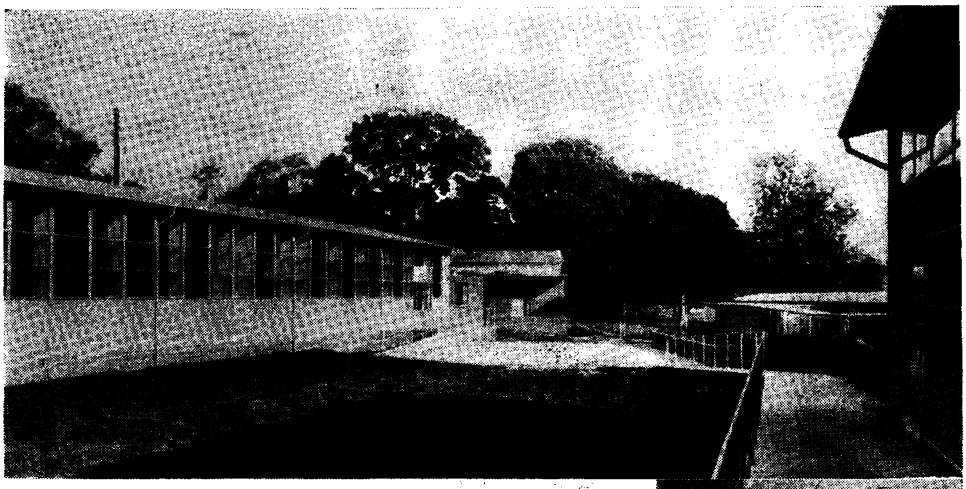

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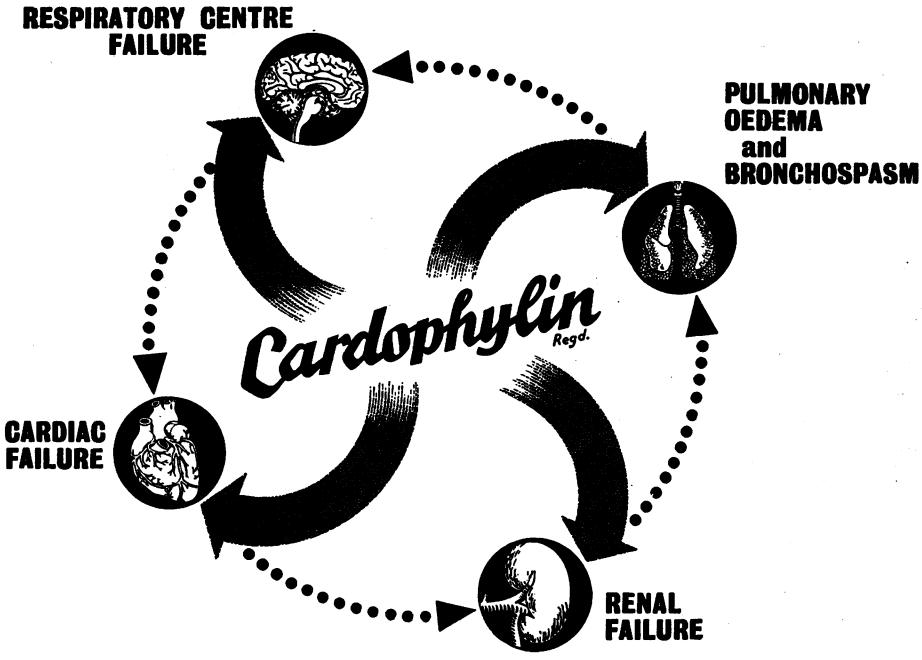

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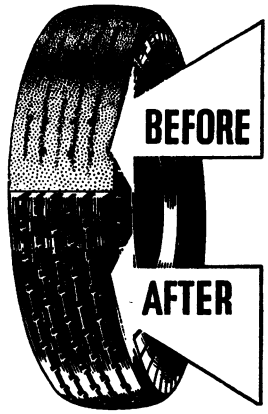

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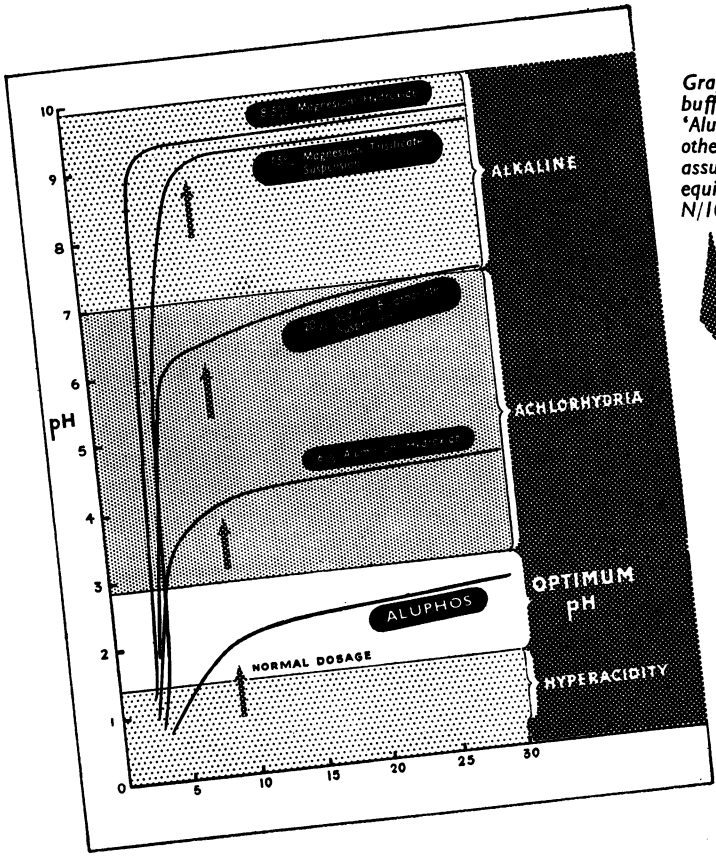

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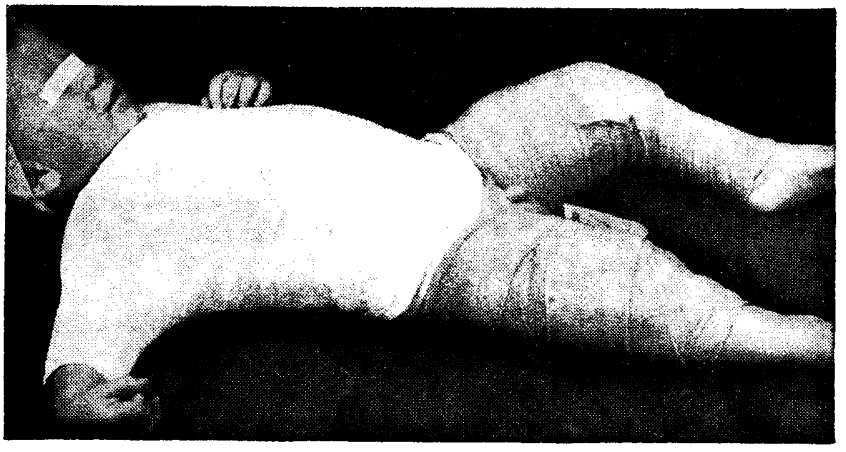

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CONTENTS

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THE ULSTER MEDICAL JOURNAL

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2. Manuscripts should be typewritten with double spacing and with wide margins. They should be fully corrected, and contributors will be responsible for the payment of any sum charged for alteration in printer's proof in excess of ten shillings per sheet (16 pages).
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The following letter has been addressed to those who already subscribe by Doctor John F. Harrington, who, with Doctor John Logan, is an Honorary Secretary. Needless to say, the Committee will be only too glad to send forms for completion of the Deed of Covenant to others who desire to help this very good cause :—

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We remain,

Yours faithfully,

J. C. ROBB, *President.*
J. W. S. IRWIN, *Hon. Secretary.*
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THE
ULSTER MEDICAL JOURNAL

PUBLISHED ON BEHALF OF THE ULSTER MEDICAL SOCIETY

Vol. XXI 1st NOVEMBER, 1952 No. 2

Baron Larrey (1766-1842): Napoleon's Chief Surgeon and His Times

By J. C. ROBB, M.D., M.CH.

Presidential Address to the Ulster Medical Society, Session 1951-52

DOMINIQUE JEAN LARREY, Baron of the Empire, Commander of the Legion of Honour, Inspector-General of the Medical Staff of the French Armies, Chief Surgeon of the Grand Army, and First Surgeon of the Imperial Guard, was born in 1766, three years before Napoleon Bonoparte, whose loving follower Larrey was destined to become. His birthplace was in the romantic region of the High Pyrenees, at the village of Beaudeau.

At the period of Larrey's birth, centuries of misrule were about to culminate in a mighty catastrophe for France. At the beginning of the eighteenth century, France was the most powerful nation in Europe. Under Louis XIV, she had threatened to dominate the whole Continent, but her advance had been checked largely by the genius of Marlborough. From twenty years of aggression her finances had never recovered. Though with her virile, ingenious people, France's capacity to recover financial equilibrium seemed self-evident, her every effort to do so failed. The blame was laid at the door of the aristocrats, whose privileges alone seemed to stand between the nation and a happier future.

All power was centred in the throne, and the once turbulent nobles of France lived lives of dissipation around the palace of Versailles. Increased privilege was the price which the sovereigns of France had paid the Nobility for the loss of ancient powers—privilege, not to do but to receive. Everything went by favour and not by merit; the nobles thronged Versailles, leaving their estates in utter neglect and ruin, and permitting their peasants to starve and rot. The people, in the words of Macauley, were "beasts of burden, and were soon to become beasts of prey."

In these times the French peasant had to work for his lord two or three days in each week, he had to pay a proportion of his produce to the Church; and finally there were the King's Taxes, the Land Tax, the Poll Tax, and certain indirect taxes, such as the tax on salt, which the peasants were forced to buy at a large price. The King had a monopoly of this commodity and each year some ten thousand of the peasantry were imprisoned, two thousand condemned to the galleys, and several hundred executed for offences against the salt laws alone.

As has been said, "At this time there were trees growing in the forest, out of which the frame of the guillotine was to be made." It must have been evident to all thoughtful minds in 1766, that Jean Jaques Rousseau spoke the truth when he said, "This is an age of revolutions."

Larrey, like many great men, was born poor. His parents were too poverty-stricken to pay for his education; and what instruction he got was obtained gratuitously from the Abbé de Grasset, a good and kindly churchman, who had originally become interested in the boy, because he possessed a good voice and sang in the choir. When Larrey was thirteen years of age his father died, and the son went to Toulouse to live with his uncle, Alexis Larrey, Chief Surgeon to a large hospital in that city. Larrey attended the hospital, and at 15 was appointed dresser, and after that House Surgeon. In 1787, at the age of 21, furnished with letters of introduction, he started to walk to Paris, alongside a slow-moving wagon. Larrey was a typical southern Frenchman, short, round-headed, stoutly built, a first-rate marcher, impervious to fatigue.

Soon after reaching Paris, he took a public examination, and obtained an appointment as Auxiliary Surgeon in the navy. He walked to the great naval station at Brest, underwent another examination, and was assigned to the "Vigilante." As the ship was not to sail for some months, Larrey passed the time in lecturing to students in anatomy and surgery, an instance of that fiery activity that possessed him all his life. The newly-appointed Surgeon sailed from Brest to Newfoundland in April, 1788, and was gone six months on his trip. Sea-sickness early convinced Larrey that any talents he might possess would be more easily developed elsewhere than in the navy, and upon his return in October of the same year he arranged to retire from active service. The voyage was not without many interesting happenings, none of which escaped his restless curiosity. In his notes he discusses sea-sickness, frost-bite, the Eskimos, plumage of birds in the Arctic zone, mosquito-bites, and, like him, we also wonder as to the fruits of the ill-mated love affair between a cow and a caribou that forced its way into the fold! Larrey reached Brest on his return journey in October, 1788, and was glad to set foot on land. For several days all hands were suffering from want of provisions; "there remained only a little brandy, and a cow-in-calf, very thin."

Soon afterwards he proceeded to Paris and was there at the beginning of the memorable winter of 1789. He worked at the Hotel Dieu, under the orders of the celebrated Surgeon Desault. It was at this hospital, and at the Hotel Royal des Invalides, that Larrey acquired knowledge sufficient to enable him to serve

with credit three years later in the Army of the Rhine. A hospital colleague of Desault at this time was Chopart, still remembered in these days for his amputation at the mid-tarsal joint. At the Invalides, Larrey saw Sabatier at work. This surgeon is the man who advocated suturing a divided intestine over a cylinder made of a playing card. Desault is particularly remembered for his circular amputation of three incisions, a cone being thus made, the apex of which is the divided bone. At the height of his fame six hundred pupils attended his clinics.

In digression, I may be permitted to make a short resumé of the political situation in France, which led up to Larrey's first military experience —the Campaign of the Rhine in 1792.

In the atmosphere of angry suspicion which prevailed in Paris after the 1789 revolution, one of the chief enemies of the revolution appeared to the Assembly, which was then governing France, to be Leopold the Austrian Emperor, brother of Marie Antoinette. Nothing was more likely to make the position of Louis XVI and Marie Antoinette impossible than a foreign war against this brother of the Queen. Pretexts for a war were not lacking. Leopold could complain of French encouragement to a revolution in Belgium, which was then part of the Austrian Netherlands, and Marie Antoinette, then a prisoner of the revolution in the Tuilleries, was entreating her brother Leopold to summon a European Congress to deal with the French revolution. Leopold, in conjunction with the King of Prussia, issued a declaration which seemed to threaten France with the combined action of the European powers, if Louis was not accorded the treatment which his status deserved. Marie Antoinette saw in an unsuccessful defence against foreign invasion, the one chance for the salvation of her husband's crown.

Leopold unexpectedly died and his successor Francis, young, vigorous and carefree, was prompt to take up the challenge of the Revolutionaries. Though the French Army was disorganized, and Austria and Prussia were leagued against them, the French were confident of victory, and Louis XVI was compelled to declare war in May, 1792. The result was what might be expected. The first hostile exchanges were sufficient to show that the revolution had no army upon which it could rely for the defence of the country.

It was during this period of uncertainty, when the old Army had proved itself incompetent, and before the new volunteers of the revolution had proven their worth that the fate of the monarchy was decided. How, it was asked, could the war be made to succeed whilst Louis and his wife, friends of the enemy so it was believed, were giving secret encouragement to the invader. Eventually, after many vicissitudes, and due largely to Danton and the Marseilles revolutionaries, the Austrians were defeated in November, 1792, with Austrian Belgium as a desirable acquisition. As it was a settled policy of Britain never willingly to acquiesce in the annexation of Belgium by a great continental power, Britain was drawn into the fight by France declaring war in February, 1793—a

war which lasted twenty-two years with a short interval until the defeat of the French at Waterloo in 1815.

It was during this campaign of the Rhine that Larrey, painfully impressed by the utter lack of system in caring for the wounded, conceived the idea of organized effort on military lines to give immediate and adequate succour to the victims of battles. Usually the wounded remained where they fell until fighting was over, rarely receiving surgeons' attention until twenty-four hours had passed. In cases of defeat they were abandoned. Larrey decided the surgeon ought to go to the wounded, and that aid must be a matter of routine and administered with the same status as any other military measure. He deemed the hospital provisions, three miles in the rear, as called for by Army Regulations, wholly inadequate.

Larrey arranged a systematized service of ambulances and movable hospitals or dressing stations as an integral part of the Army as a whole. His "Ambulances Volantes," or flying ambulances, were placed under the control of the Chief Surgeon of the Army. They consisted of various medical divisions; the divisions being a unit to meet the needs of a military division. These units could be multiplied as required; if divisions were combined to form Army Corps, or subdivided to serve brigades and smaller formations.

The administrative work of a medical division was handled in two sections. One was composed of a commissary and two subordinates, 12 mounted and 25 unmounted sick attendants, all soldiers, and a drummer. The other section consisted of 12 light carriages and 4 heavy vehicles, each with a man in charge, and a driver, a horse-shoer, and a bugler. The personnel of a medical division numbered 113 persons, and included a directing surgeon and 15 junior surgeons of different ranks. The light vehicles drawn by one or two horses were on springs, furnished with mattresses, padded, with pockets for supplies. They collected the wounded and evacuated them to heavy wagons, which bore them to the principal dressing station, or hospital beyond the battle area. The serious cases were attended to where they fell, and emergency surgery was done under fire. This "division" may fairly claim to be the first efficient field ambulance in the history of war.

This scheme was put to the test for the first time during the operations before Metz in 1793, and gave such general satisfaction that Larrey was eventually ordered to Paris to assemble the necessary ambulance units for fourteen armies of the Republic.

Larrey's experience in this campaign led him to advocate immediate amputation in certain grave injuries of the extremities—a view that he never abandoned. His practice of immediate amputation—incidentally, it should be remembered, that there were no nurses, no anæsthetics — was an essential life-saving operation, under the conditions in which he worked. Amputated immediately the man could fend for himself, and he could forage for food. If it were an arm which he had lost he could walk off back towards France, or if it were a leg he

could be put on a horse and ride stage by stage on the way home. In spite of moving about, Larrey's cases escaped secondary hæmorrhage.

A factor in his success was that the wounded came under him directly after the injury, because he was always close behind the fighting; in the shelter of a trench under the walls of Acre, behind a sand dune at Aboukir, in a barn just behind the line of Guards holding Eylau. During a lull in the fighting he was seen by Wellington at Waterloo.

The first marked success by Larrey was on 30th March, 1793, on the height of Alzez, in the Palatinate, when on a cold day he did immediate amputation on seven cases and all recovered.

A case in the Army of the Rhine was that of a Captain Buffy of the Artillery. His right arm was struck by a cannon ball on the elbow. Without falling off his horse he continued to command for ten minutes, until the firing of his guns had silenced the enemy. Then Larrey amputated his arm, and he forthwith mounted his horse and returned to his battery. He had healed on the twenty-fifth day, whilst continuing on active service in the field.

Another case of immediate amputation, which can be quoted among the many, was that of General Silly, aged 60, at the second battle of Aboukir on 21st March, 1801. This officer's leg had been nearly shot off below the knee, and was amputated immediately. Just then the English cavalry charged down, so Larrey picked up his instruments, placed Silly on his shoulders, and ran into a field planted with caper bushes on ridges between ditches, where the cavalry could not follow, and he got back to the rear. Silly recovered quite well, but Larrey noted that he never received any recognition for services rendered!

A chieftain among the Mamelukes had his arm smashed by a cannon-ball after the battle of Heliopolis. When Larrey approached with his knife he bowed his head in the belief that it was his head which was to be cut off. He explained that he had never heard of amputations. Amputation at the shoulder-joint was performed, and he had healed when handed over twenty-five days later.

One may collect the results of immediate amputations scattered through his books, and, adding them together, say that he was successful in more than three-quarters of his amputations. Of those that died, some did so as the result of concurrent injuries, some during convalescence, especially during the retreat of the French Armies.

The actual cutting time in performing these amputations was incredibly short; eleven seconds for a shoulder, and twenty seconds for a hip disarticulation.

In digression, it is of interest to know that in the days which I am discussing, musketry fire produced a smashing effect up to 30-40 metres, and ceased to be effectual at 250 metres. Cannons ceased to cause more than contusions at 1,000 metres.

As to other treatments employed, all punctured wounds were freely incised and drained; fractures were promptly reduced and immobilized by a fixed apparatus. In gunshot wounds and burns, Larrey practiced débridement, the value of which we now more fully appreciate. The actual cautery was used in

cases of hospital gangrene, the glowing iron being applied until healthy tissue was exposed. In presence of infection the wounds were treated with liquor sodæ chlorinatæ, a term peculiarly familiar when we recall the formula of Dakin's solution, but ordinary wounds were dressed with saline lotion, in contrast with the greases, ointments and elaborate dressings of that period. He was insistent upon rest for all wounds, by not too frequent dressings. In 1794 Larrey was appointed Chief Surgeon to the Army that was intended for Corsica. During the few days he remained in Paris he found time to marry. The honeymoon was spent largely in a stage coach, as he had been ordered to join the Army of the South at Toulon. Here he met for the first time an undersized, pale, long-haired, reserved, and almost emaciated artillery officer, twenty-five years old and named Napoleon Bonoparte.

The presence of the English fleet prevented the French from reaching Corsica, so Larrey spent some time in Nice with the Army of the Maritime Alps. At this time, he formulated his views on the treatment of the apparently drowned, advocating a form of artificial respiration, that consisted in blowing into the mouth to distend the lungs and pressing on the chest to empty them. He also interested himself in teaching military and naval surgeons, giving courses in anatomy, and theoretical and clinical surgery.

Then after a short service in Spain, Larrey returned to Paris, and opened a school for teaching anatomy, physiology and practical surgery. His fame as a lecturer reached the Government, at that time the Committee of Public Safety, and he was appointed Professor of Surgery and Anatomy in the Military School of Medicine at the Vâl de Grâce.

In May, 1797, Larrey set out as Chief Surgeon of the Army of Italy, which had recently been placed under the command of General Bonoparte.

Since Napoleon and Larrey had met for the first time at Toulon, the former had gone through many trials, and had achieved some notable triumphs. He had lost his commission, had been harrassed by poverty, had walked along the streets contemplating suicide, and had thought of going to Turkey to fight under the Sultan. In a critical moment, when all others were afraid, he had accepted the command of Paris from Barras, and had defeated the National Guard, which had come 30,000 strong to attack the Convention. As a reward for this achievement the command of the Army in Italy had been given him. At the age of 28 years this remarkable man had won a coveted object of his ambition, the command of an active army, about to enter a campaign.

The difference between travel then and now is well exemplified by the fact that the surgeon had to wait forty-eight days at the foot of Mont Cenis, owing to snow drifts and avalanches. While among the Alps, he was much impressed by the cases of goitre and cretinism he saw, and attributed the condition to the drinking of snow-water.

He visited most of the towns of Northern Italy establishing schools of military surgery.

He was particularly interested in Venice, a city then noted for its gaiety, its luxury, and its indolence. Larrey's account shows that the well-to-do residents of Venice had a reasonably comfortable life. The custom of a fashionable Venetian was to rise from bed between two and three o'clock in the afternoon, to pass the remainder of daylight in his apartments clad only in a morning robe, to take a light meal, then to array himself in his finest and walk to the Square of St. Mark's, or some adjacent island, to idle about for a time, to go to dinner, and then to the theatre, which did not begin till nine o'clock and did not finish until about one o'clock in the morning. After leaving the theatre, he could pay any ceremonial call he had to make, going from place to place in a gondola, keeping on paying visits to five or six a.m., and then going home to bed. The law forced the working man, whose occupation produced noise, to live in a remote section of the town, so that the day slumbers of the illustrious personages might not be disturbed.

At the end of this Italian war, the triumph of Bonoparte was complete. He had made France supreme in Italy to the exclusion of Austria.

In 1798 Larrey was ordered to Toulon with directions to prepare to assume the position of Surgeon in Chief to the expedition that was to go to Egypt under General Bonoparte.

Napoleon had been invited by the Directory to attack England. He preferred to assail that enemy by an attack on Egypt, thinking that having conquered that country, he would create an Eastern Empire; perhaps march on India, perhaps on Constantinople and bring the shop-keeping island to beggary by the destruction of its trade. "You are," he said to his army as he embarked at Toulon, "one of the wings of the Army of England."

Larrey was successful in obtaining Surgeons from the schools of medicine at Toulouse and Montpelier. So readily did professional men respond to the call made, that he was able to reckon on about eight hundred well equipped Surgeons, of whom many had served in the Army of Italy. The expedition embarked on 13th May, 1798.

Larrey participated in all the dangers and troubles of this harrassing campaign. At Acre he was wounded and Napoleon complimented him in public, on his gallantry and usefulness. After the battle Napoleon presented Larrey with a sword of honour, on account of his having operated in the very midst of the conflict on one of his best Generals, General Fouqières. This operation was an amputation at the shoulder-joint, and was done by the method that we still call "Larrey's Amputation." Larrey wore this sword nearly all the rest of his military life. When he was captured at Waterloo, it was stolen from him by the Prussians.

On one occasion during this campaign the men were obliged to kill their horses to make soup of them, Larrey, in speaking of a later campaign, tells of flavouring soup with gunpowder, as a substitute for salt.

In this Egyptian Campaign, the Medical Officers were at first confused because plague occurred with pneumonia—pneumonic plague. In one plague

hospital within eight weeks every hospital attendant, three physicians, fourteen surgeons and eleven apothecaries died. As for the hospital orderlies, they were nearly all criminals, who, having escaped from the galleys, were drawn to hospital work by the prospect of robbing the sick. By the end of the siege of Acre most of them were ill or dead.

Larrey was soon able to draw up some excellent rules for the medical officers. When entering the hospital, he was to put on a linen overall, damped with vinegar and water; this included a covering for the head and a mask. Also he was to put on sandals or sabots, which had been dipped in solutions of turpentine or spirit. He should wash his hands and dip them in vinegar and water before operating, and on leaving he should wash his hands and any other exposed part. His linen overall should be washed and placed in the open air, also his shoes and his instruments, after washing these with brandy. Larrey was constantly in the very midst of the plague, but he never took the disease.

The journal of Larrey's Campaign in Egypt and Syria is rich in striking incidents. He shows us how afraid the soldiers were of being bitten by scorpions, and yet that the bites were not dangerous, that he trephined a number of cases, and warmly advocated operation for meningeal hæmorrhage, recording successful cases. He describes cases in which leeches lodged in the nose and naso-pharynx, and remained there for weeks before the condition was understood, producing exhausting hæmorrhage. He blames bad water for liver abscess; and also for "nervous putrid fever with bloody fluxes," which was probably typhoid. Tetanus seems to have been a veritable scourge among the French, killing many men. He insisted on the causative influence of a wound in this disease. He tells us that at the Siege of Acre, two hip-joint amputations were performed. Larrey advocated this operation, in spite of Pott's view "that it is a bloody, dreadful, and unjustifiable procedure." He tells us that the wounds often became full of maggots, and speaks of abscess of the liver, and says there were many cures. His rule was to open it when it had become glued to the surface. He also described "Egyptian ophthalmia" which caused many cases of blindness. This was obviously trachoma. Descriptions are also given of rib resection for the drainage of empyema of the chest, and he also stresses the relationship between aneurisms and syphilis, for which he recommended inunction with Mercury.

Larrey returned to Toulon on the 24th December, 1801.

Soon after he arrived in Paris, and commenced a course of lectures to a very large number of students; it is interesting to find that at that early day he was lecturing on Experimental Surgery, a branch that for many years after was rarely taught or thought about.

Larrey had remained in the East for a long time after Napoleon's return.

During Napoleon's absence the Directory which was governing France had with success endeavoured to establish republican governments in the countries surrounding France. Holland, Northern Italy, Genoa and Switzerland had all

modelled on the French Government and were allied with France. The Monarchs of Europe were once more stirred into action. Austria agreed to take the field again, while the Tsar of Russia and the Sultan of Turkey, who were impressed by the presence of Napoleon in the Eastern Mediterranean, agreed to help.

So, when Napoleon returned in 1799, he found a very different state of affairs than had existed before his departure to Egypt. The Austrians had driven the French out of Germany, a Russian Army had been sent to help the Austrians and had forced the French out of Italy; the Russians had, however, been recalled, and the Tsar withdrew from the coalition on account of misunderstandings with the Austrians. Therefore, in 1800 Napoleon decided to attack the latter in two directions: one, by an army which he sent to the Rhine, and another which he himself led over the Alps into Italy. He encountered the Austrian Armies at Marengo in Northern Italy in 1800 and gained a decisive victory, which was supplemented in December by an equally brilliant victory for the Rhine Army at Hohenlinden in Germany.

"On Linden when the sun was low
All bloodless, lay the untrodden snow."

Larrey was not present at these battles, as he had not returned from the East.

With regard to the sole remaining enemy, Great Britain, the position was impossible of definite solution; the British navy was supreme on the sea and England could not be invaded, and, since both countries were exhausted, a temporary peace was made by the signing of the Treaty of Amiens in 1802. This Treaty proved to be merely a temporary truce and a coalition was formed against France, which included Austria, Russia, Sweden as well as Britain.

As soon as this coalition was established in 1805, Napoleon gave up his idea of attacking England, and turned his army on the Austrians, defeating one of their armies decisively at Ulm in Bavaria, in the same week as Nelson defeated the French Navy at Trafalgar. Later in the year, on 2nd December, he met an army of Austrians and Russians at Austerlitz and won one of his most notable victories.

Prussia at this point realized the danger to German independence which Napoleon's successes entailed, and, not waiting for Russian assistance which was on the way, declared war on France. The Prussians were utterly routed at Jena on 14th October, 1806, and their military prestige was completely shattered.

The battle of Austerlitz was the greatest victory that Napoleon ever won. The direction of the Medical Corps of the Army was in the hands of Larrey. The night before the battle, the Emperor, without warning, rode along the French line. Larrey tells us that the Army "was electrified by his presence. By a unanimous and spontaneous motion, the whole army grasped wisps of straw and set them on fire; and in a moment, you beheld a new kind of illumination, symmetrical and brilliant by more than 45,000 men." Larrey in his memoirs states that he established a field hospital in a granary, and that all the wounded, friend and foe alike, were operated upon, their wounds dressed and in hospitals in less than twenty-four hours. An epidemic of what Larrey called "a malignant, nervous

and putrid hospital fever" developed and caused the death of many of the wounded. In this account, given at some length, Larrey unquestionably describes typhoid fever.

After these victorious battles the Emperor marched his army into Berlin, where Larrey met many distinguished physicians and scientists, including Humboldt, the great explorer.

He comments on the ravages caused by syphilis in the French Army.

There now remained the Tsar to be dealt with and in East Prussia the great battles of Eylau and Friedland were fought. The battle of Eylau was fought on 8th February, 1807, in a snowstorm. Larrey noted that the temperature was zero Fahrenheit. He worked all day and the following night with his feet in the snow. The dead and dying were stripped by the survivors to get clothing and boots. The wolves came out from the neighbouring forests, as depicted in the painting in the Salon of 1901, called "L'Heure des Fauves."

By the Treaty of Tilsit which ensued, Prussia lost half her territory, and had to submit to various humiliating conditions, whilst Russia escaped easily and indeed got share of the spoils. Napoloen was now at the zenith of his power. After these battles Larrey was made Commander of the Legion of Honour.

At this point in his Memoirs, there is a treatise on dry gangrene of the feet, and also a description of anthrax, which he thought came from eating the meat of animals that had the disease. In this campaign also, for the second time Larrey made a counter opening in the cranium to reach a bullet. He introduced a gum-elastic catheter as a probe, and trephined over the point of it. He found a flattened bullet on the inside of the bone.

I will not weary you with Larrey's return to Paris, and stories of campaigns in the Peninsular War, except to relate the interesting casualty of Marshal Lannes, Duke of Montebello, Napoleon's foremost General. The Marshal's horse fell down a mountain, and as a consequence Lannes was severely bruised about the thorax and abdomen, seemed to be gravely injured, and appeared to be dying. Larrey got a large sheep and had it stunned by a sudden blow on the neck, and two butchers quickly skinned it. Whilst this was being done, the Duke was greased all over with camphorated oil of camomile. His body was then completely wrapped in the skin of the sheep, which had been taken warm from its back. The reeking skin was fastened together at its edges, so as to completely surround the injured man's body. His extremities were wrapped in warm flannel, and the Marshal was allowed to take a light tea with lemon-juice and sugar. Ten minutes after its application he went to sleep, and next day, although his urine contained quantities of blood, he felt much better, and went on duty on the fifth day, being able to ride a horse.

Spain was not alone in the experience of having national feeling aroused by Napoleon's despotism. The Emperor Francis of Austria longed for revenge and Austria declared war in 1809. After the desperate battle of Aspern, near Vienna, from the field of which the French had to fall back, and in which Marshal

Lannes was killed, and of which in soliloquy Napoleon is reputed to have said, "Has Achilles heel indeed been hit," the next battle was the tremendous conflict of Wagram, ten miles from Vienna, upon which the fate of the French Empire was staked and won. It was after this fight that Larrey was made a Baron of the Empire, and was granted a pension of five thousand francs.

During 1810 and 1811 there was a pause of exhaustion, throughout the centre of the Continent, whilst the commercial blockade, aimed by Napoleon against the staying power of Britain, slowly but surely crumbled, as the Tsar grew more sceptical of Napoleon's final success, and eventually it came to the point that Napoleon must either abandon his scheme or fight Russia.

In June, 1812, after securing the neutrality of Austria and Prussia, Napoleon accumulated a vast force of more than half a million men, and started on the ill-fated advance to Moscow, reaching that town in September.

Larrey, in the following words, gives a most vivid description of the burning of Moscow and the subsequent retreat:—"It would be difficult to imagine a more horrible picture than the burning of Moscow on 18th and 19th September, 1812. Dry and fine weather aggravated the conflagration. The whole city was enveloped. The sudden explosions of magazines and oil reservoirs added to the horror of the picture, which struck terror to all hearts; soldiers and civilians alike. The soldiers were evacuated, but I remained with some comrades in a strong house near the Kremlin.

"The citizens, who were left in the city, were caught in the conflagration, and rushed about wildly from house to house — women carrying children on their shoulders, running to escape death, which threatened them from all directions. I saw old men their beards alight, seated on carts, drawn by relatives endeavouring to rescue them from the inferno. In eight to ten days this great city was reduced to ashes, with the exception of the Kremlin and a few stone churches."

The stores that Napoleon counted on finding in Moscow were practically all burned, and the army faced a retreat without definite means of procuring more. The cold grew intense, and gradually ambulances, artillery wagons, etc., were all sacrificed in the bivouac fires. To stumble or fall in the line of march was almost certain death; some one in the ranks would stagger and fall; to come to his relief was impossible for his weakened and almost frozen companions. Larrey owed his life to his walking, and not attempting to ride, and to the affection the common soldier had for him. It is an interesting fact that in spite of deaths from privation and fatigue, a major enemy which mowed down the retreating army was an epidemic of typhus fever.

Following the retreat from Moscow the days of Napoleon's sweeping victories were over, and he would have done well to accept the suggestion by Austria, that peace should be made on terms which would restore complete independence and integrity to Austria and the German States. But Napoleon would have none of it; he still believed in himself and his destiny, and rejected all offers of peace.

In October, 1813, he was hemmed in by the armies of Russia, Prussia and Austria, and was utterly defeated at Leipzig, the "Battle of the Nations." The Allies at length entered Paris in triumph in April, 1814, and Napoleon was forced to abdicate, and retire to the island of Elba.

When the order to send the Emperor to Elba was given Larrey begged to be taken along; but Napoleon would not let him go, telling him that the army needed his services, and that it was his duty to stay with it, and finally bade him adieu. Larrey returned to Paris, but service under the Bourbons was distasteful, and on the sudden return of Napoleon in March, 1815, he resumed his old role of Surgeon-in-Chief to the Army. On 7th June he joined the army in the field, and was present at the sanguinary battles of Ligny and Waterloo. During the great battles of the 18th June, Larrey established his ambulances at Caillou, and subsequently at the farm of La Belle Alliance, places which any of you who may have visited the battlefield, will readily remember.

He had been operating without intermission from mid-day until eight o'clock in the evening, when on the debacle taking place, the Emperor directed him to withdraw his ambulances, and make for the frontier. Larrey started off with some of his surgeons, when they were overtaken by some Prussian Cavalry; he discharged his pistols at them and they replied with their muskets, with the result that Larrey's horse was wounded; it fell, bringing down the rider, and whilst on the ground he received two sabre cuts, which rendered him insensible. On regaining his senses he endeavoured to reach French soil on foot, but was then taken prisoner by the Prussians, who robbed him of his arms, watch, ring and the sword which Napoleon had given him, finally bringing him before a senior officer, who sentenced him to be shot. From this fate he was saved by a Prussian Surgeon-Major, who recognised him as the lecturer in surgery in Berlin in 1812. Eventually he was released by Blücher, whose son he had befriended in former days, when wounded, and was sent to Brussels. Larrey returned to Paris, where he was deprived of his rank and pension by the Bourbons. In 1818, however, his pension was restored, and he was at the same time nominated Surgeon of the Royal Guard.

Napoleon died in 1821, and Larrey was plunged into grief at the death of his old Chief. He was greatly touched to learn that the Emperor had spoken of him in his will; and had referred to him as "the most virtuous man that I have ever known," and had bequeathed him 10,000 francs as a souvenir of undying affection. Nineteen years afterwards, when the Emperor's remains were brought home to Paris from St. Helena, an erect and fresh-looking man, wearing the uniform of the Imperial Guard he had worn at Wagram, followed the remains of Napoleon to his tomb.

In 1826 Larrey took a trip to England and was received with the greatest distinction by many eminent men, including Astley Cooper and Sir Walter Scott. At this time he also visited Dublin, Edinburgh and Glasgow.

In the Revolution of July, 1830, which overthrew Charles X, he personally directed the care of the wounded.

Finally, in 1842, when aged 76, Larrey was sent to Algeria, where there had been serious trouble among the young conscripts, forced upon a foreign service without adequate pay. The military had unfortunately borrowed from Oriental barbarism the pits or silos in which the recruits were buried up to their necks as punishment. Larrey declared to the military officers that such punishments dishonoured humanity; punishment out of proportion to the faults, only hardened the hearts of undisciplined soldiers.

On his journey home, Larrey suffered for the first time from fatigue; on landing in France he heard of the illness of his wife, and so hurried, travelling by night as well as day. But he developed pneumonia, and on arriving at Lyons died on 25th July, 1842, his wife dying in Paris a few days before him.

In 1850, a statue was set up to the memory of Baron Larrey in the grand court yard of Vâl de Grâce—the military school of medicine.

This ceremony was an event of national importance, and the eulogies of the great man were pronounced by many, eminent in science or high in army or Government circles. Among the speakers was Roux, representing the Academy of Sciences. His estimate of Larrey is interesting. He calls him the hero of humanity, the idol of the French soldier, and, in quoting the famous words of Napoleon's will, "Larrey is the most virtuous, the most upright man that I have ever known," recalls that Marcus Aurelius used almost identical language in regard to Galen. On the professional side, he credits Larrey with great ability as a military medical officer, as an organizer, as a pioneer in the adequate and systematic relief of the wounded. He calls attention to Larrey's use of the word débridement (a word often heard to-day) in gunshot wounds, to his fine work in the treatment of fractures, his belief in the prompt amputation of limbs, when the destruction of tissue has been excessive, his method of disarticulation at hip and shoulder, and his ambulances volantes.

A French writer, moralizing on the life of the Duke of Wellington, concluded his essay by asserting that the greatest legacy the Duke had bequeathed was "the contemplation of his character." May I add this aphorism to the subject of my sketch, and express the opinion that Dominique Jean Larrey has, in the same sense, left a valuable legacy of service to humanity, and that he was a brave, truthful and loyal man and a benefactor to the human race.

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The Heritage of the Royal Victoria Hospital

Opening Address

By IAN FRASER, D.S.O., O.B.E., M.D., M.CH., F.R.C.S.(ENG.), F.R.C.S.(I.)

Royal Victoria Hospital, 9th October, 1952

"GENTLEMEN, — It has fallen to my lot, in accordance with an old established custom, to inaugurate at this hospital the Session 1852-53. Though the task is by no means enviable, yet when I look round me, and recognise in familiar faces pupils of bygone sessions, I am strengthened in the assurance that whatever imperfections I may exhibit in discharging the important duty entrusted to me, I shall receive the encouragement of patient attention and a lenient criticism. Gentlemen, I beg to give you, one and all, the warmest salutations of the staff and authorities of the Belfast General Hospital, as you now start for the first time to 'walk the wards' of this hospital. In an introductory address, little of novelty can be expected, and I can only hope to arrest your attention by giving you my own impression as earnestly and forcibly as the strength of my conviction will command."

Mr. Chairman, these were the words used in the opening lecture to this Medical School exactly one hundred years ago to-day, by Dr. A. G. Malcolm. If we change "Gentlemen" to "Ladies and Gentlemen" (there were not, as yet, lady medicals then), and the "Belfast General Hospital" to the "Royal Victoria Hospital," they would represent my feelings at this moment. It is reassuring to know that a man of his eminence found the task an unenviable one, and had difficulty in finding an original subject. If that was so one hundred years ago, it is more so to-day, when the ground has been tilled many times by my predecessors. It is pleasant that what Dr. Malcolm calls "an old established custom" in 1852 is still going strong, with increased vigour, one hundred years later.

In his address, he points out that it is thirty-two years since the first medical student had entered the wards of the hospital as a regular registered pupil. If in those thirty-two years five hundred pupils were successively recorded, it will give you an indication of the vast number that has passed through in the subsequent one hundred years.

It was in 1815, Waterloo Year, that the formation of this medical school was first suggested. It was in 1820 actually that the first enrolment took place, but it was not until the 3rd June, 1826, that systematic clinical instruction was started under what was then described as the able and zealous superintendence of James McDonnell and others. In going through his list of five hundred pupils, Dr. Malcolm pointed out that some abandoned their studies, some were removed by death, some qualified but "threw physic to the dogs" and took up other work, but most were scattered over the world, wherever the British flag at that time was acknowledged.

In Belfast, as distinct from many others, there was a flourishing medical school and a medical society before there was a university. As a result, Queen's, as we now know it, started with a medical bias, and we are proud to think that the medical is still the largest faculty. It is impossible to start a university unless there has been already a good primary education available, and so it was not until such old schools as the Belfast Academy (1785) (Royal in 1888) and the Academical Institution (1810) (Royal in 1831) had been well established that there was a sufficient number of potential students.

In early times, the teaching of medicine was by example and pupilage, whereby the candidate or aspirant hitched his waggon to a suitable star. Sometimes the star of his choice was rather third-rate. Thus, at first, all teaching was entirely clinical, but later college and university classes appeared. This allowed many students to be taught at the same time, and the student was taken further from the bedside and nearer to the blackboard or laboratory, and so too much stress began to be laid on the disease and its features, and not on the patient.

One must constantly keep in mind that there is no such thing as a disease. You cannot see it or feel it, but you can see one of your fellow-creatures suffering from a disease. The student who thinks only in terms of disease and not in terms of humanity will, I hope, take up another calling.

Too many think that the student life ends and the millennium appears with the attainment of the mystic M.B. Nothing could be further from the true state of affairs. Most people will whole-heartedly disagree with Sir John Bland-Sutton, who stated that he divided his life into three periods :—In the first, he learned his profession; in the second, he taught it, and in the third, he enjoyed it. I would have hoped that he would have enjoyed it all through, and that he would have been a learner till the very end.

Da Costa was surely nearer to the mark when he said, "Each of us, however old, is an undergraduate in the school of experience; when a man thinks he has graduated he becomes a public nuisance!" Lord Lister went even further still: "You must always," he said, "be students, learning and unlearning to your life's end, and if you are not prepared to follow your profession in that spirit, I implore you to leave its ranks and betake yourself to some third-class trade."

Much is asked of the doctor in the way of patience, endurance, study, self-denial, frustration and disappointment, and in return, the most that one should expect is the mental satisfaction of living a life of usefulness and the ability to give health and happiness.

To many these demands are too great. It is not unnatural, therefore, that through the years many truants from medicine have appeared. A large number of books and papers have been written on these renegades, and when we see what they have added to the world in other spheres we can see how right they were. A recent book has collected some of their names and has shown how some became priests, and others pirates and privateers. (Dover of Dover's Powders). Many became manufacturers and others murderers (Buck Ruxton, Crippen).

Some became travellers, like Mungo Park (Niger), and David Livingstone (Zambesi, The Victoria Falls, ?The Nile); others, travel agents like Sir Henry Lunn, who, although he did not discover Switzerland, helped to put it on the map. They include Prime Ministers, like Sir Godfrey Huggins (S. Rhodesia); Clemenceau (1841-1929) (The Tiger of France); Sir Starr Jameson (1853-1917) (Jameson Raid. P.M. of Cape Colony, 1904); Sun Yat Sen (first President of the Chinese Republic and first graduate of the College of Medicine in Hong Kong) (1866-1925), and cricketers, churchmen, philanthropists (Dr. Barnardo), and misanthropists (Dr. Guillotin). Actually, this statement is not quite correct. The decapitation machine named after him was invented by an army surgeon, Antoine Louis, and called "La Louisette," and taken over later by Dr. Guillotin, who considered decapitation less cruel than prolonged torture. The list includes many politicians — Walter Elliot, Christopher Addison, and Charles Hill (The Radio Doctor) — who preferred the hurly-burly of politics with its bright lights and its shade. Many were men of outstanding genius. In the world of poetry we have only to mention Smollett, Schiller, Oliver Goldsmith, Keats, and Robert Bridges (the late Poet Laureate). We would like to think that it was their close connection with humanity that allowed them to observe and write with such understanding. Connected with the stage we have Sheridan Knowles, Sir Charles Wyndham, and, more recently, James Bridie, who needs no introduction in Belfast. With fiction, we associate the names of Warwick Deeping, Conan Doyle, Francis Brett Young, A. J. Cronin, Austin Freeman, De Vere Stackpoole, Somerset Maugham. Many others, like Halliday, Sutherland, Sir Ronald Ross, Sir James Paget, Ed. Jenner, Sir Clifford Allbutt, Sir Frederick Treves could be mentioned, but they are no truants — possibly truants from Literature. They all remain, and remained doctors, with poetry, painting, writing, a form of relaxation — a distraction in their so-called spare-time, described by the Greeks as PARERGON—"work by the side of work." It was said of one:

> "In leisure hours in epic song he deals,
> Writes to the rumbling of his coach's wheels."

Thus you all have the opportunity to change and become, among other things, possibly a pirate, a poet, a priest, or even a Prime Minister.

It is interesting to record the many objects of every-day use that have been invented by doctors who forsook their profession. To mention shorthand, typewriting, Mackintosh water-proofing, fire insurance, the police helmet, artificial silk, the oxygen-hydrogen blow-lamp, the Bath Oliver biscuit, the electric battery, is to give only a few from a large and very assorted mixture.

I mention these to let you see that it is open to you to change—and certainly you should never feel that you must adhere to a line which does not bring the best out of you, and into which you cannot throw yourself wholeheartedly. The converse holds equally true. Many of you here to-day are starting your studies at an older age than the average. This may be due to force of circumstances, e.g., a war, or possibly by conviction and of your own choice. I would say at once that you start with a great advantage. It is like a diver standing on a high board; he can

see all round him; rather than the man at the water's edge, who can only see the water but not beyond it. It would be impossible to give the total list of the great names in medicine who started in other spheres, and by conviction changed — men such as Claude Bernard and Sir James McKenzie, and many others who changed the face of medicine. The list is much too large, and many are still living.

My task is a difficult one. It is to tell you in one breath to trust your teachers, listen to them and follow their advice, and in the same breath to beg you to think for yourselves and be sceptical! Sydenham was called a "man of many doubts" and therein lay the seat of his greatness. Oliver Wendell Holmes put it aptly, as he alone could do. (You will remember that he was Professor of Anatomy and Physiology at Harvard). (He once said of himself, "I occupy not a chair but a settee"). "Medical students," he said, "naturally have faith in their instructors, turning to them for truth and taking what they may choose to give them. They are babies in knowledge, and not yet able to tell the breast from the bottle, pumping away for the milk of truth at all that offers, were it nothing better than a professor's shrivelled forefinger."

Sir Andrew Macphail recognised your difficulty as well as you do when he said: "In these days when a student must be converted into a physiologist, a physicist, a chemist, a biologist, a pharmacologist, and an electrician, there is no time to make a clinician of him." I know you would agree with the recent writer who said that if anything more must be added to the medical curriculum, then let it be "spare time."

Medicine differs from all other studies, and the answer can rarely be reached with the precision of a mathematical sum. Medical diagnosis has been defined as "the art of coming to a conclusion on insufficient evidence," a fact that is as true to-day as it was 2,500 years ago, when Hippocrates made his often-repeated statement that "Experience is fallacious and judgment difficult."

It is Osler who has told us to start with the conviction that absolute truth is hard to reach in matters relating to our fellow-creatures — healthy or diseased — and that the art largely consists in balancing probabilities. It is this indefiniteness that has made the study an art as well as a science, and it is the presence of the unknown factor that makes the subject an ever-intriguing study. The final diagnosis is a complete picture of irregular pieces of signs and symptoms which, we hope, will fit together to give a definite answer. If one piece does not fit into the scheme of things, we must piece them together again, and we must *not* try to make them fit the plan we have in mind. They must make the picture.

It is as true to-day as it was 200 years ago, when it was said: "If I set out to prove something, I am no real scientist — I have to learn to follow where the facts lead me. I have to learn to whip my prejudices."

In medicine we must follow where the signs and symptoms lead us, and not make them fit in with a preconceived idea.

Although in this town the medical school and hospital ante-dated the university, yet most of us call ourselves "Queensmen." It is now almost synonymous with

our hospital. It is different from London, where the graduate tells you with pride that he is a product of Thomas', Guy's, Bart's, etc., but does not mention his university, if, in fact, he did belong to one.

Although Clinical teaching in Belfast started in 1820, it was actually in 1832, at the Belfast Medical Society, that the detailed formation of a university was discussed. It was three years later, on the 4th August, 1835, that a start was made, and for the purpose certain rooms in the Academical Institution were used. For fourteen years the medical school was at Inst., and although Queen's College was officially opened in 1849, it was not till 1862 that all the classes were finally transferred from the Institution to the College. To start with, there were seven Professors in all. John McDonnell, second son of Dr. James McDonnell, founder of the Belfast Medical School, was appointed Professor of Surgery, but never actually took up office.

As Dr. James McDonnell's name reappears with such regularity, and as the founder of the Belfast dispensary and the Belfast Fever Hospital (the first fever hospital in Ireland) and through these institutions the founder of the Belfast Medical School, he should be known to all connected with it. James McDonnell was born in 1762, in the Glens of Antrim, three-quarters of a mile from Cushendall on the road to Waterfoot. His father was a prosperous farmer, and he was descended from a very illustrious forebear, Sir Alistair McColl McDonnell. Educated at first in one of the small cave schools near Waterfoot, later privately in Belfast, he finally graduated in 1784 in Edinburgh. Growing up in the Glens, he carried throughout his life his outdoor interests. He loved the fauna and flora of the district and was later the authority on the mineralogy and geology of County Antrim. He retained through life his love for music, particularly the harp, and was later the founder of the Harp Society.

In 1784 he settled in Belfast, which at that time was a town of 17,000 inhabitants, and which had in all, ten physicians. Within four years he was the most eminent figure in the profession, although still a very young man. He was not only an outstanding doctor, but a man of great philanthropy. In his early years in practice, it was his custom to visit his widowed mother every fortnight. He used to leave at midnight on horseback, get a fresh horse at Glenarm for the last part of the journey, and after a few hours with his mother, he was back in Belfast within twenty-four hours — a ride of almost one hundred miles.

The years 1790-1800 were crowded years of political and intellectual life in Belfast. In 1791 the Society of United Irishmen made its appearance, founded in Belfast by Wolfe Tone. In 1792 the Harp Festival took place, in which again Dr. McDonnell was the leading spirit. In the same year the start was made to provide a general hospital. Up to this time the only available amenities had been in the Old Charitable Institution. For this purpose a house was taken in West Street, off Smithfield. Here the infant charity started, the embryo of the present Royal Victoria Hospital. The next few years were busy ones for Dr. McDonnell, and although he was on most friendly terms with the new political movement and

its leaders (Wolfe Tone, Russell, and Henry Joy McCracken) he appeared to be too much occupied with his profession to take any active part in its activities.

In 1797, with fever raging and the famine at its height, he felt he must start a fever hospital. This was to become the first fever hospital in Ireland. For this purpose a building was taken in Berry Street. It was a period of difficulties for all, with the North-Eastern counties under martial law.

In 1798, the Rebellion itself broke out. Dr. McDonnell on one occasion was called by Mary Ann McCracken to attempt to restore to life her brother, Henry Joy McCracken — leader of the insurgents at the Battle of Antrim — whose body had been brought home after being hanged in Corn Market. Unable to go himself, he sent his younger brother, Alexander, but the effort, naturally, was useless.

In 1799, following the Rebellion, further funds were raised and three more houses obtained in West Street. For the next eighteen years this was the inadequate hospital accommodation in Belfast and district, till in 1817 the Belfast General Hospital in Frederick Street opened its doors as the first real hospital in the town.

Although fully occupied with his large hospital and private practice, Dr. McDonnell was associated with every philanthropic movement in the town. He was President of the Belfast Reading Society (later the Linenhall Library), and at it he read many scientific papers, mostly of geological and antiquarian interest.

McDonnell was now the leading physician in the town, a position he retained for thirty years, till ill-health forced him to retire. He lived throughout his long life in the same house, 13 Donegall Place — his neighbours at either end were Lord Massereene and the Marquis of Donegal. His advice was sought all over the country. He discarded the wig early on, but he was an impressive figure, as, dressed in drab coloured knee-breeches, with white stockings, he drove about the country in his gig, reading his papers through a large magnifying glass, and accompanied by his old manservant, Mick.

He was directly responsible for the foundation of the Belfast Hospital and Belfast Fever Hospital, and promoted the funds for its construction, and although he envisaged in 1815 the possibility of the University, the beginning of which was in 1837 — as in this year of 1952 a young Queen had ascended the Throne — it was not till 1826 that, as senior physician, he gave the opening lecture at the hospital, choosing as his subject "Systematic Medicine." He was then 65 years of age, and described as being in his prime. This is now the age when consultants are asked to retire, although Prime Ministers are considered at their best. He did in actual fact retire from the active staff of the hospital one year later, and was presented with a gift of plate to the value of £700 in recognition of forty years public service and philanthropy. He was appointed to the consulting staff. He still retained his busy practice, and only towards the end was he confined entirely for some time to the house before he died in his *eighty-second year*. His grave, with its magnificent Celtic Cross, should be visited by all. It lies in a remote corner of the Layde Cemetery at Cushendall.

It will thus be seen that our present University evolved from the original medical school at the hospital, later from a nucleus at the Institution, followed by what was then the Queen's College, Belfast, which, with its two sister colleges in Cork and Galway, made up the Queen's University of Ireland.

These three colleges, providing teaching facilities only, were very loosely knit together, and there was the additional disadvantage that the student had still to go further for the necessary examinations. At the same time, Dublin considered that although there were the three constituent colleges in the provinces, there was none in Dublin, and so the Catholic College was started (in 1852). Some time later (1879) the old Queen's University of Ireland was abolished by Act of Parliament, and the new body, now incorporating the four colleges, and calling itself the Royal University of Ireland, took its place. This still had the same disadvantage as before, and the problem was only finally settled in 1908, when *Queen's College,* Belfast, was given complete autonomy, both for lectures and examinations, and became the *Queen's University,* Belfast, as we know it to-day. The other three colleges also got powers to carry out their own examinations, but still remained as the university colleges of the new *National University of Ireland.*

Queen's started just following the greatest tragedy that ever happened in Ireland. The Irish famine of 1845-1849 had ravaged the land. No one factor was responsible. It was the accumulation of many. Primarily, there was the failure of the potato crop — this was caused partly by the potatoes rotting in the ground, due to an intensely wet season (most of the farming was done in the lazy-bed system) and secondly, the potato blight, which at that time was all over the world. Other crops, wheat, barley, oats were also affected, and green crops, which escaped, were not made much use of for food. At the same time there was an outbreak of cholera, and with the animals an epidemic among pigs, which nearly annihilated them. There was also foot-and-mouth disease in cattle, "rot" in sheep, and even the domestic fowls began to die. The blight affected, in addition to the potatoes, wheat, oats, turnips, beans, onions, even conifera — large tracts of larches and pines were destroyed, areas of land were laid bare, and the countryside had a foul stench. This state of affairs recurred annually for five years. Those able to emigrate were fortunate. In 1847, three million people were being fed by the State. Help came from England, from the Society of Friends, and the British Association. Thousands of tons of flour came from New Orleans. The death rate was high, and with the dispensary doctors alone it was one in four. The population fell from eight million to four million, where it has remained since. I would ask you all, as you go along the magnificent Coast Road from Larne to Ballycastle, to remember it is one of the many works given to create labour and food at that time, and may it remind us to hope and pray that such devastation will never be repeated, and I would like you to associate it with the founder of this school.

It would seem an unusual moment for the Queen's University of Ireland to build, regardless of cost, three magnificent colleges in Belfast, Cork and Galway.

But good and success often come from adversity and a humble origin, rather than prosperity and a silver spoon.

For a clinical medical school to evolve, we must have the hospital side — hospital beds, patients, teachers and apprentices — and the university side — classrooms, laboratories, and technical training, and professors of the now clinical subjects, anatomy, physiology, etc. The hospital side was slowly progressing, thanks to the persistence of Dr. McDonnell; and the university problem, also the product of his brain and imagination, was gradually being organised. It is quite remarkable that one man in his lifetime should have been able to achieve so much.

Just as Dr. Malcolm's lecture is one hundred years old to-day, so the movement which was the indirect origin of the Belfast Hospital took place one hundred years before that. In 1752, a group of philanthropic Belfast business and professional men started a plan to raise, by lottery, the funds necessary to build a poorhouse, an infirmary and a church. This was the beginning of the Belfast Charitable Institution. In Dublin to-day the Sweepstake is again used for this purpose. It was not, however, until 1771 that the first stone was laid, and it was actually in 1774 that the building was opened and patients admitted. It is very creditable, when we think that in 1752 Belfast was a mere village on either side of the Farset, a tributary of the Lagan, and had a population of eight and a half thousand people.

In 1792 was mentioned for the first time the possibility of the formation of a medical school; again James McDonnell was behind the project. He was still a relatively young man of 32 years — just eight years in practice — at that time, and he had to wait another thirty-three years before he had the honour, as senior physician, of giving the first lecture. He had worked all this time, fighting for the establishment of the hospital and the university, but when it finally reached fruition, he was too old to be appointed professor, or to hold any other university rank. Possibly he enjoyed the struggle; possibly he was like many others, who found that to travel hopefully is a better thing than to arrive, and the true success is to labour.

While making full use of the buildings in West Street and Berry Street, it was soon felt, with the growing industry in the town, the increasing population, and more modern methods that a real hospital must be built to replace the converted dwelling houses. Thus in 1810 Dr. McDonnell approached the Marquis of Donegal with a request for land. The site chosen was Frederick Street, and for the next five years, till the necessary money was forthcoming, the land was fenced in and let out for grazing. This was Waterloo year. The last hospital building had been started in 1798, the year of the rebellion. How often medical advances and wars are closely linked. There is often more in the relationship than mere coincidence. It was two further years before the first patients were admitted (1817), and by then the population of the town had increased to 31,000 people.

With the completion of the hospital in Frederick Street and the appointment of a medical staff, a resolution was passed that "physicians and surgeons

should be invited to place their pupils there to acquire experience, with a hope that a school of Physic and Surgery, of no trifling importance to the young medical students of the neighbourhood and to the Province of Uster, might be started." So a training was provided, starting in 1820, but the candidates had still to go further to get the qualifying degree or diploma of some college or university.

So we see that, starting in 1752, by the good will and generosity of some public-minded folk, a movement began which produced the Belfast Charitable Institution, later two small temporary hospitals in Smithfield, and finally the Belfast General Hospital, which, starting in 1817, existed till 1903, when it was superseded by this present building. Incidentally, the Belfast General Hospital, by Royal Charter in 1875, was allowed to change its name to the Royal Hospital, Belfast, and the term Royal Victoria Hospital was given when the present hospital was contemplated in 1899. The old hospital had outgrown its usefulness. The town had got so large, and the heavy industries in the town were employing so many people at risk, that a hospital more centrally placed, with all modern facilities in the way of operating theatres, X-ray department, and other ancillary services was required. And so the old Royal Hospital finally became disused in 1903 as a hospital, and was eventually pulled down in 1936. The present Royal Victoria was opened on the 27th July, 1903, by King Edward VII and Queen Alexandra, having cost £110,000. Lord and Lady Pirrie had much to do with its completion, but the various wards along the corridor commemorate the names of many generous donors and loyal workers.

But I will not forestall the book now being produced for publication next year by Dr. Marshall to celebrate the Golden Jubilee of this hospital. It will be a worthy sequel to the book of the old Belfast General Hospital, which was published in 1851 by that medical historian, Dr. Malcolm, whose works I have freely quoted already. This small book should be in the library of all who have an interest in the history of our medical school. It can still be obtained occasionally in second-hand bookshops for a few shillings. Dr. Malcolm died shortly afterwards, at the early age of 38, probably from phthisis; and a scholarship, open annually at this hospital for competition, was founded by a gift from his widow to commemorate his name.

This hospital is the last that will be built under the old schemes of lottery, bequests, donations, subscriptions, philanthropic begging, street collections, etc. It is no longer in the hands of the public, rich and poor, but the responsibility of the State.

We cannot see the old regime of the voluntary hospital go without a sigh of regret, but we must be realists, and in a world of rising costs and taxation at its present height, philanthropy can only be what its name implies — a *love* of one's fellow-men, with no longer any practical or tangible significance.

Thus we see the origin of our medical school, arising by two roots, one the hospital side, starting in 1752, and the other the true university side, starting with its professors at Inst., in 1835, and finally these two fusing, as they have done now, to form our present medical faculty.

Just as we have seen the hospitals pass from voluntary ownership to State control, so we also see a nationalising and central control over the education of the student. In the early days, it was one pupil trained by apprenticeship to one master; later many pupils trained in groups by visiting doctors — specialists in various branches and often with divergent outlooks and approaches to the subject. To-day the tendency throughout the British teaching world is the standardizing of the teaching and thought by the appointment of the full-time teacher. Most people consider that there should be less teaching and more learning; less dictation and more thinking; less standardization and more originality.

It is commonly said that a tree is better known by its *fruits* than its *roots*. This is one of the many trite sayings which are only the expression of a partial truth. He would be indeed a poor gardener who did not know from what the tree had sprung, in what type of ground it was planted, and how it flourished. Many accounts have been written of the early life of this medical school and hospital, so that its history is not hard to trace. The roots are well known, and the fruits in many cases speak for themselves. They have been well tried and have stood the test over 132 years. There is hardly a country in the world where there is not a Queen's University or a Royal Victoria doctor who has not brought credit to his Alma Mater.

The staff of a hospital or university is not static. It is a living structure, like a tree shedding branches and sprouting others. It is constantly changing, being added to or taken from. Another process of growth, however, does exist, and that is grafting. The graft, however, must bring something to the parent trunk and the parent trunk must be fresh and virile to carry and nourish the new grafts.

It is the duty of the orator each year to record these changes. We welcome firstly Professor Graham Bull. In his blood he carries the puritan qualities of his Scottish ancestors, the initiative of the South African pioneer, and the flare of the research worker from the London Post-Graduate School. He comes to us with a glowing reputation of academic knowledge and originality in research. He succeeds three very great under-graduate teachers—Professor James Cuming, Professor James Lindsay, and Sir William Thomson. We hand on their torch, with our best wishes and with a friendly welcome. To let him know what he may expect, may I say that his predecessors filled the chair for 34, 24 and 27 years respectively. But we must agree with Emerson that although we cannot overstate our debt to the past, the present has the supreme claim.

We welcome also Mr. Alexander Taylor, F.R.C.S. He graduated at Aberdeen University, and followed this by an extensive experience of war surgery in the Navy, a good preparation for the study of Neurosurgery. He comes as a very welcome addition to the Nut Cracker Department, and we can assure him of a very genuine welcome.

The latest addition to our staff is Dr. Harold Millar — a promotion from the ranks of this hospital. He is an old Campbellian, with his war years spent with

the Royal Navy. A long period of apprenticeship to neurology, and a comprehension of what the wild waves are saying in the electro-encephalogram makes him an invaluable addition to our staff. It would appear that, as with the case of Mr. Taylor and Dr. Allison, a period in the Silent Service helped to cultivate the patience necessary for this branch of medicine.

Ladies and Gentlemen, you are the future fruits of this school. You are still perhaps in the budding stage, and you have a serious responsibility, but you will be handed a torch well worth carrying. Winston Churchill, the greatest Prime Minister of history, said last year at the Mansion House dinner, "It is only by studying the past that we can foresee, however dimly or partially, the future." You can look back with pride over 132 years.

In that time much has happened at home and abroad. Times have changed greatly from those early days when only after due consideration, and with opposition from the relatives and often the family doctor, a patient finally consented to be subjected to a "stethoscopic examination." To-day the stethoscope is being thrown away and replaced by the radiograph and the cardiac catheter. A patient came to hospital some weeks ago for a heart examination. She was preparing to remove her blouse when she was told to remove her stockings instead, and plunge her feet into two rather large jam-jars filled with cold water. She is still wondering where her heart really is! We must watch that we still keep a sense of proportion. A patient said to me recently: "I would like to go to hospital, but I do not think I would be strong enough to stand it." It is a simple remark, but it makes us think. We must not overdo science and forget the patient.

An advance towards freedom that has made our hospitals what they are is the freedom and position given to the nursing profession. This came about primarily through the advocacy of that amazing genius, if strange and difficult woman, Florence Nightingale. Modern nursing is the outcome of the tradition that she started, and this is an opportunity to thank again the sister profession for the help upon which we so much depend. In fighting for a cause, it often pays best to work from the top down, and not from below up. Florence Nightingale started at the highest levels and, having got the ear of the people with influence, such as Lord Herbert, Secretary of State for War, she was able to gain the necessary support. Had she tried to work in the opposite direction, through what the army calls the "correct channels," she would have been baulked at every turn.

Florence Nightingale and the Crimea are often quoted as the trigger point which started the movement, but it was essentially the period of emancipation generally. Industrial revolution was showing its results. Art was creeping in to increase the æsthetic side of life. A queen was on the Throne. Surgery was increasing, and it was being realised that the success of the surgical operation depends as much on the nursing after-care the patient receives as it does upon the brilliance of the surgeon's technique. Women's clothing was getting more rational, the bustle, the crinoline and the wasp-waist were beginning to disappear,

and emancipation generally was in the air. Early-Victorian prudery was relaxing, giving place to mid-Victorian common-sense.

The time was ripe; the necessity was great; there was the public demand; and the state desire to avoid scandal, and with all this the ready money, which is only made available to public services by the necessities of a war. We forget, in the horrors of a war, the good that so often is a by-product. Wars create emergencies. Emergencies break down the rigid, hide-bound traditions. Wars create sympathy, and sympathy liberates money which would otherwise not be available.

One of the interesting fights of the last century was for the admission of women (or ladies, if you prefer it) to the medical schools. Their admission produced one of the most acrimonious medico-political fights of the nineteenth century. It lasted for almost twenty years, but finally, and naturally as is their custom, they came out victorious. Up to 1856 there had been a few women doctors scattered throughout the country, mostly with doubtful degrees or diplomas and mainly employed in midwifery. In 1856, by Act of Parliament, women were debarred from practising medicine unless they were graduates of a recognised *foreign* university. Thus many of the early lady doctors were forced to obtain degrees on the Continent, in France, Switzerland, Italy, Belgium, etc.

From 1856 to 1876 they fought, till by Act of Parliament it was again permissable for women to enter a British university to study. This did not necessarily mean that all universities threw open their door at once. In our own school, it was not till 1889 that the first woman medical student was admitted. Only five years before that the then Professor of Midwifery in Belfast had said that he hoped that "the culture and refinement of the age would have forbidden such a consummation." Much long-standing opposition had to be overcome. Horace Walpole had described the lady medical as "a disgusting and unwomanly creature." Even one of their own sex, Mme. de Staël, went as far as to say, "After all, a woman's mission is to help men to be good." Sir William Jenner, although a man of the greatest breadth of vision, also said, "I have one loved daughter, and sooner than see her at the dissecting bench, I would see her dead before me." Moxon thought he had made an important discovery when he pointed out that the female brain weighed 3½ ounces less than the male.

Although the universities allowed women to graduate, it was not till 1902 that women got the opportunity to be house surgeons, even in their own hospital, the Royal Free, in London. In the Royal Victoria Hospital they were permitted to be resident pupils in 1903, but there was no woman house surgeon until 1915. The inability to get resident posts, and consequently post-graduate training and post-graduate degrees, made it very difficult for the bright graduate to succeed; and without higher qualifications posts on hospital staffs of consultant status were for many years impossible.

By 1911 all Scottish and provincial schools were open to women medicals, except Oxford and Cambridge, but none of the London schools. In the wars of 1914-1918 and 1939-1945 certain medical schools opened their doors temporarily, but it was

not till 1948, and the advent of the National Health Service, that Guy's, Thomas', Bart's, Middlesex, and other male strongholds capitulated. The excuse, or reason, given by one school was that they had only a limited number of vacancies and the admission of women greatly weakened the rugby team! It is not necessary to give the name of that medical school.

The last century was punctuated by the three great advances which made modern surgery possible. These were in the forties, the sixties and the eighties, and for those that forget easily, they all begin with A — anæsthesia, antiseptics and appendicitis. Appendicitis in this case merely represents the opening of the abdominal cavity with impunity. Three other A's have since come to the fore-front—aseptic surgery (Von Bergmann, 1897), antibiotics (1929-43) and atomic research, leading to the radioactive isotopes, so that cancer, among other diseases, is now facing a new weapon of diagnosis and attack.

Modern surgery is not the result of one or two incidents, but the combination of many factors. Every new forward step stands on a previous discovery. Many of them are due to the help of ancillary services, e.g., chemists, physicists, biologists, electricians, metallurgists, the cotton and linen industry. Plastic materials, Radium, atomic therapy, diathermy, suction, anæsthesia, pre- and post-operative medication, all creep into the daily routine so quietly that the old, bad and difficult days are soon forgotten. Life is like that. I thought it was well-exemplified in a sundial I saw recently, where it said, "I record only the sunny hours." Skin grafts, bone grafts, arterial grafts, nerve grafts, corneal grafts have given potentialities to surgery not considered one hundred years ago, or just thought to be a dream. A well-stocked blood bank with a rapid turnover is the sign of an efficient and up-to-date hospital.

In 1883 Billroth said, "Any surgeon who would dare to sew up a wound of the heart would lose the respect of his colleagues." Now daily the heart is opened and its chambers examined with the gloved finger. With all this going on around us, we must avoid too much the spectacular in surgery. This is a period of high lights, bright lights; the public are interested in only the abnormal and spectacular, and the press have to supply their wishes. We must watch that medical education does not tend to foster that state of affairs. The operation on the Blue Baby or the by-passing of the hardened liver are tests of technical skill on the part of the surgeon, and of courageous and trusting endurance on the part of the patient, with interesting, if not always understood, physiological results. But in practical value, what have they done? They have allowed a small number of children who could only sit, to walk; or those that could only walk, to run, but for the economy of the world their value is as nothing compared with the discovery of, e.g., Salvarsan, quinine, anti-diphtheria and anti-tetanus sera, penicillin, D.D.T., which have saved millions of lives of people in the active period of their lives.

For every new discovery one must keep an open mind. There are those who are too sceptical, and who live in the past, whose outlook is unelastic. It is true

that many discoveries do not stand the test of time, but many often give the foundation for something really great. Prontosil may now be forgotten by many, but it was the basis from which the sulphonamides started. Cortisone may at the moment be a disappointing drug, but it is a basis on which other work will take place. Do not disdain everything in medicine which has not an immediate application. Pasteur quotes Faraday in this respect. The latter was witnessing the first demonstration of a purely scientific dicovery and around him it was being said, "But what is the use of it?" Faraday quickly replied, "But what is the use of a new-born baby?"

On the other hand, there are those dangerous folk who, because a thing is new, think it is automatically good; who must be in the fashion, whether it is in dress, language, food, cars, sport, and from whom the quack and proprietary-medicine manufacturers make their livelihood, and for whom the poster and advertisement act as a Bible. Of these, Sir Robert Hutchison, writing of Fashions and Fads, said: "It is possible to be too up-to-date. It is always well before handing the cup of knowledge to the young to wait till the froth has settled."

Looking back, I believe I learned, as a student, as much from one teacher who I know was wrong in nearly all he said, but what he said made me think. In other words, he did not teach, but made one learn. We are being blinded by science at the moment. Two students were asked recently to look at a very anæmic young woman. One asked immediately for the results of her blood copper and cobalt and her serum iron. The other, with a practical outlook, examined her first and found she had been bleeding for weeks from extensive piles. Science without sense is valueless. It is worse—it is a danger—it is a lazy method. It was said when sulphonamides came in first that you gave the patient a week's treatment, and if at the end of that time she was no better, you carried out a physical examination. Make sure that modern multiple laboratory tests, done often without a real reason, do not lead us to the same error.

The out-patient department is a much better place to learn than the wards, because there you see the case as the consultant first sees it. In the ward, frequently the investigations are looked at before the patient, and a diagnosis, often wrong, is made and certainly it is difficult not to be influenced by the paper reports.

Do not be afraid to argue with your teachers. If they are good they like it, because they have a reason for what they said. Do not be afraid to say, as many do, "But sir, Professor—or Mr. or Dr.—thinks quite differently to that." Again, ask the reason why, and you will find that fundamentally the differences often are small. If you watch two golfers, their styles may be very different, but if they each do a sixty-five you may with safety take your choice.

The approach to the patient is what matters most. You must get his confidence and respect and love. You will then get a history of the illness, and, in nine cases out of ten, the diagnosis is made. Twenty minutes history and three minutes physical examination is much better than three minutes history and twenty minutes examination. This is certainly true of most digestive complaints;

perhaps not of intricate neurological and other investigations. The student who has varied interests himself, who is interested in people, things, places, and in the various types of employment of the patient, always gets a grip on the life, both business and home, and the requirements of the patient concerned. To hear a student asking his patient for the details of his work as a hackler, rivetter, plater, caulker, weaver, always creates confidence. He soon knows whether he may ultimately expect to go deaf with the noise, whether the work entails the use of the right or left hand, whether he works in bare feet, etc. In this town, to know the industrial hazards is to know mankind.

A medal was struck some years ago to commemorate the life of one of the surgical pioneers of this school, Mr. Robert Campbell. The inscription it bears is: "Where there is love of humanity, there is love of *the* art." You will notice that humanity comes first, and automatically the second part follows, but the reverse is not the case. Occasionally the intricacies of the art make some forget the patient.

The family doctor, which most of you here I hope will be, is described as the best member of the profession, for the very reason that humanity—a knowledge of the home life, and the trust of the family—are his privilege; something denied to a certain extent to the consultant, to whom the care of the patient must unfortunately be mainly a passing concern.

For your life to be a success, it must be a mixture of sense, sympathy and science. If you have not sense — sense of responsibility, sense of honesty, sense of time, sense of decency, common sense — you are lacking in basic structure. If you have not sympathy, medicine is not the right calling for you. It must be remembered that the doctor has two duties — to cure when such is possible, and when this is not possible, to smooth the passage to the grave. You will in this respect be faced all your life with problems and difficulties. When the case seems hopeless, is it right to take a risk? Is the slender chance worth taking? Bland Sutton puts it well in his book :—

"The abyss is worth the leap, however wide,
When life, sweet life, is on the other side."

Take the chance and give them the chance. You may be blamed, but you have only one judge in such matters, and that is your conscience. You must fight to the end, even when it is hopeless. There is nothing more dispiriting to the patient and friends than when the doctor, in whom all their hopes are placed, throws in his hand.

"Brave Doctor, say but one good word.
What shall we do when hope is gone?
The words leaped like a flaming sword,
Fight on, Fight on, Fight on and on!"
(*With apologies to Cuncinatus Hind Millar. 1841-1913*).

And finally, science; a good knowledge of modern medicine and modern methods is essential, but you cannot be expected to be expert in *all* its intricacies. No one man can hope to be au fait with the recent advances in heart surgery,

neurology, skin diseases, blood diseases, and atomic compounds, but the new State Scheme of medicine has made them available to the public, and although you may not be able to use them you have these facilities at hand, all freely available, ready to command.

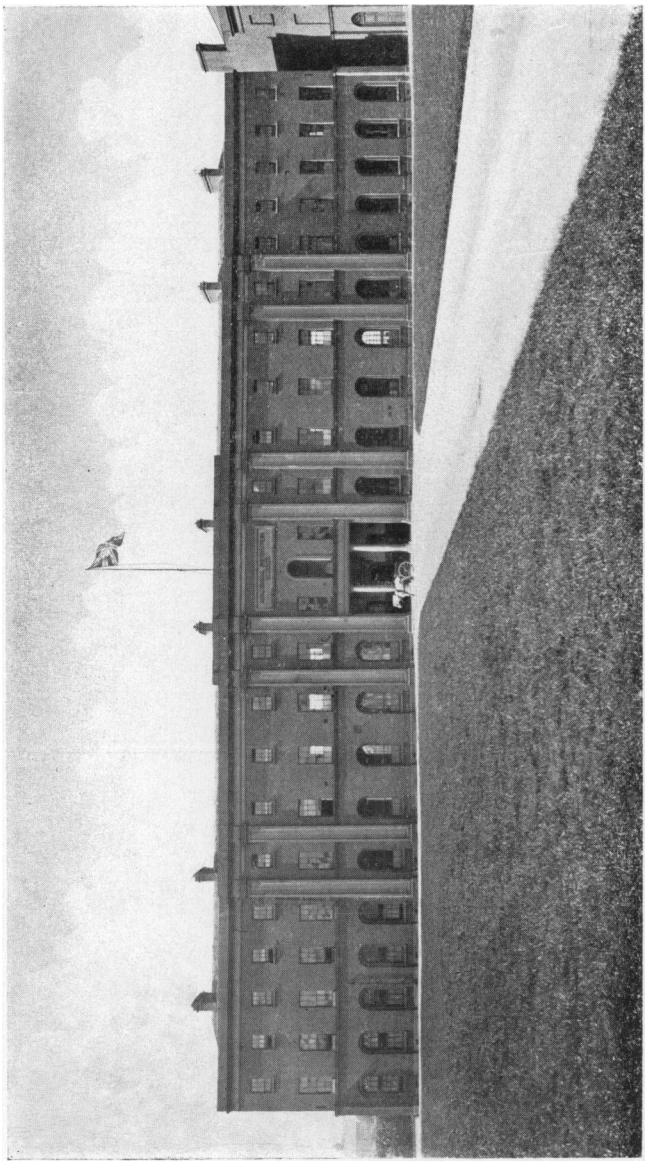
In twenty-five years from now, one of you here may possibly be giving this lecture. As Dr. Malcolm said, it is an unenviable task. Might I suggest that you start at once, and certainly do not leave it to the last moment, to complicate your summer holiday!

In *my* twenty-five years I have seen pernicious anæmia, thyroid disease, diabetes, diphtheria, scarlatina, erysipelas, endocarditis, rickets, gonorrhœa, tuberculosis, glands in the neck, osteomyelitis virtually disappear as social problems or a medical scourge, and yet before *you* there lies still a vast field of unsolved problems. Cancer, tuberculosis, poliomyelitis, the rheumatisms, the leukæmias, myelomatosis, Hodgkin's disease, disseminated sclerosis, encephalitis, and Parkinson's disease, and the common cold — these are still a constant challenge to the medical profession.

You have behind you a wonderful heritage, and you have before you a future full of productive possibilities. How many of this list of diseases will be no longer a problem to suffering humanity when the orator gives this address twenty-five years from now? I wonder would it be possible that a Queensman might have the signal honour of slaying one of these giants?

This school, your school, has got good solid roots firmly planted; let it be that you, the fruits it produces, are worthy of it.

Thanks are due to the Governors of Royal Belfast Academical Institution, the Belfast Museum and Art Gallery and to Sir Lucius O'Brien and the Governors of the Charitable Institution for the loan of illustrations or blocks.

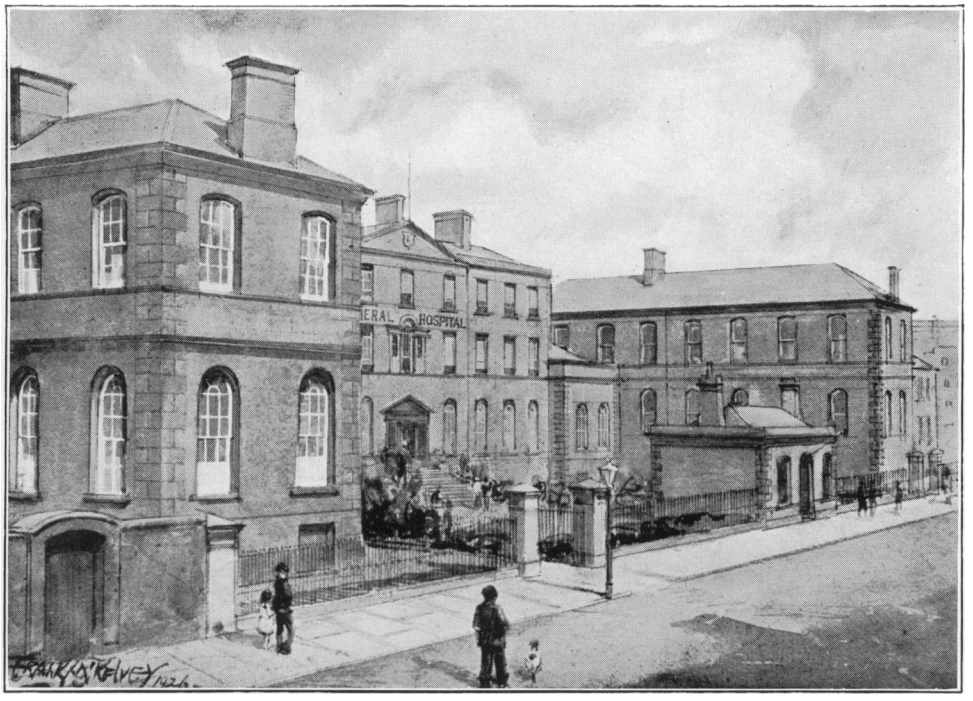


ACADEMICAL INSTITUTION—1810. ROYAL ACADEMICAL INSTITUTION—1831.

The Belfast Medical School started here in 1835, and was finally transferred to Queen's College in 1862.

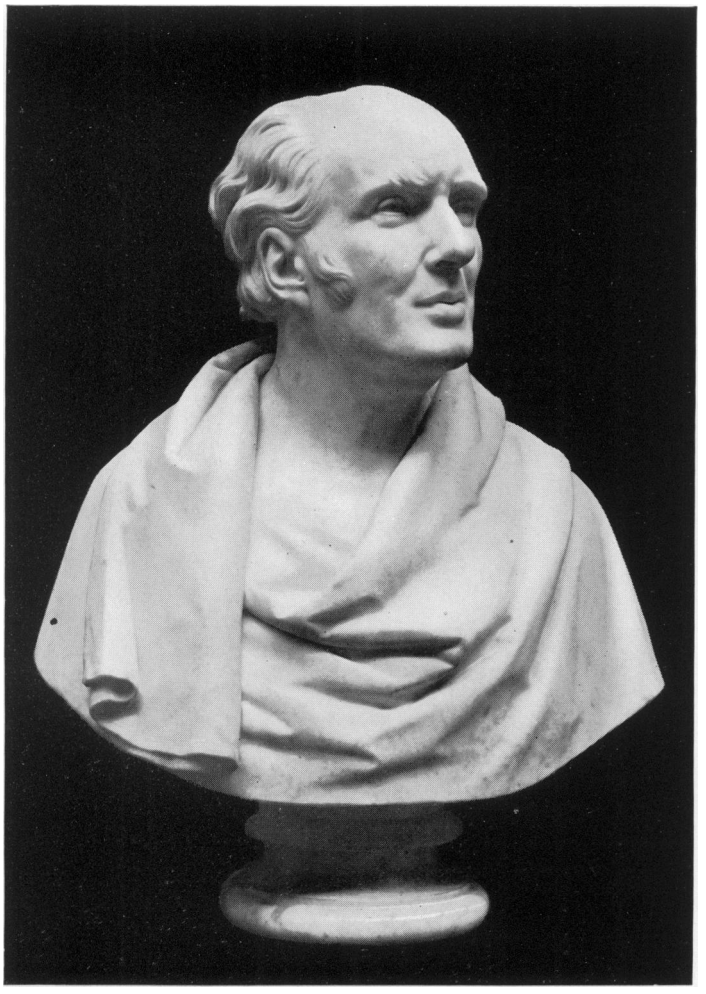
THE BELFAST CHARITABLE INSTITUTION

Opened 1774. The first Belfast Dispensary, and the forerunner of the Belfast General Hospital.



By permission of Belfast Museum and Art Gallery.

THE BELFAST GENERAL HOSPITAL (the old Royal)
Frederick Street—1817-1903.



DR. JAMES McDONNELL

Born in Cushendall, 1762. The Founder of the Belfast Medical School. A physician, a philanthropist, and a lover of the arts.

The Social Medicine of Old Age in Northern Ireland

By G. F. ADAMS, M.D., M.R.C.P.
Belfast City Hospital, Belfast

Address given to the Ulster Medical Society, 17th January, 1952

THERE must be few people who do not have some appreciation of the practical implications of the increasing proportion of old people in our population, because the medical and social problems arising from this trend have been the subjects of many inquiries and much literary effort in recent years. As doctors, whether in hospital or in general practice, we have more reason than most to encounter these problems and to desire satisfactory solutions for them, and no doubt you are well acquainted with much that has already been written on the deficiencies of the system of care offered to destitute and sick old people prior to the introduction of the new health and welfare services. It is only necessary, therefore, to introduce my subject with a brief review of the services available in the past before considering the problems of old age as they affect us in Northern Ireland.

Before the last war, sickness or infirmity in old age presented a relatively simple administrative problem under existing arrangements: those with sufficient means, good homes and domestic help, were cared for at home; those with short-term illnesses requiring skilled nursing care, either engaged a nurse or entered a nursing home or hospital; those with long-term illnesses, homeless or unwanted at home, or simply old, infirm and destitute, were referred to the relieving officer, who was authorised to provide institutional care for them in the local authority infirmary. The system worked and in theory no one lacked the care and attention due to old age or illness. In practice, however, the system was in imminent danger of breakdown when the war ended. Conditions even in the best of the Poor Law infirmaries fell far short of modern standards for hospital care, and the ageing population resulted in increasing applications for admission despite the reluctance of old people to apply to the relieving officer when in distress. Moreover, the difficulty of recruiting medical and nursing staff to work in the depressing atmosphere of overcrowded and grossly understaffed wards caused growing concern.

The strain has increased since the war for several reasons:—Although welfare legislation in the past twenty years has abolished the grinding poverty of the last century, even now, with all our subsidies and pensions in retirement, many old people still live on the borderline of poverty, and some well below it. Rowntree and Lavers (1951) in a recent social survey used a measure of poverty adjusted to current prices and based on bare subsistence with no wasted spending. They found that in more than two-thirds of the cases living a life below a minimum

subsistence level, or what they call the "poverty line," the cause was old age. An illustrative case is quoted of a spinster aged 87 paying 8s. a week for rent and rates, living on a retirement pension of 26s. a week. Her deficit below the "poverty line" was 15s. weekly. The elderly invalid who might have eked out a comfortable existence twenty years ago on a relatively small income is in these days sorely taxed to keep a home together and is unable to afford the essential services of a housekeeper or domestic. Where there are relatives the unmarried daughter often must work to keep the home solvent, and the domestic problems of the married children may well be such that an invalid old person is an intolerable burden on the household.

Thus the ranks of what were once the destitute admissions to the infirmary are swollen by many highly respectable old persons from all levels of society. Their sense of hardship in the uncongenial atmosphere of the "chronic wards" is the greater through being deprived of accustomed privacy and home comforts.

Secondly, while the new Health and Welfare Acts will do away with much that was bad in the Poor Law, we have at the same time lost much that was good. The chief asset of the Poor Law was the system whereby the one authority was responsible for the social as well as the medical care of a destitute old person. No one would wish the Poor Law back again, but the disappearance of the services of the relieving officer leaves a gap yet to be filled. The new Acts limit the responsibility of the hospital authorities to the care of sick persons needing hospital care, whereas the workhouse infirmaries housed many old persons readily admitted under the dual control of the Poor Law administration but not regarded as "hospital" cases by the new authorities. No alternative accommodation existed for these inmates, and hospitals endeavouring to upgrade their status to modern standards and make full use of their beds have been handicapped by this burden of "residents" whom the welfare authorities could not provide for at the outset.

These difficulties have been faced in all parts of the British Isles, and when the Health and Welfare Services Acts came into force in 1948 the social medicine of old age had already been studied extensively in England. There hospital surveys made for the Ministry of Health had drawn attention to the large numbers of hospital beds occupied by old people classified as chronic sick. Several doctors working in these chronic wards had shown that much unnecessary invalidism in these people arose from neglect and lack of interest in their potential abilities, and that large numbers of hospital beds could be released, and many so-called invalids could be returned to active life, by the application of common sense and the treatment that any hospital worthy of the name could give. Social studies such as the Rowntree Report (Rowntree, 1947) followed by Sheldon's classical survey of old people in Wolverhampton (Sheldon, 1948) enable statistical estimates of future commitments to be made.

Survey of Old People in Northern Ireland.

Little comparable information was available concerning old people in Northern Ireland, though Miss Pauline Hall investigated admission trends and conditions

in the Workhouse Infirmaries in 1946-47. Her comment, that it was an unpleasant reflection that so little was required to improve some of them, still holds good in our own unit in the Belfast City Hospital. A survey of old people in their homes and in hospitals was therefore suggested, and approved by the Hospitals Authority, as a basis for future development of social and medical services for the aged. The survey was made in two parts, one a random sample of old people in their homes, and the other an examination of every patient aged sixty or over (accepted for the purpose of the survey as "old") in hospitals in the Six Counties.

I am glad to acknowledge my indebtedness to Professor Stevenson for constant help and co-operation from the staff of the University Department of Social and Preventive Medicine in this work. Professor Stevenson directed the social survey of 811 old people in their homes, and Dr. Cheeseman, joint author of the survey report (Adams and Cheeseman, 1951) and his assistant, Mr. Merritt, undertook the sampling, population estimates and statistical analysis which alone make the report worth while. Miss Jordan, an almoner appointed for the survey, and I visited each of the thirty-five general hospitals included in the survey, and we interviewed 1,625 patients aged 60 or over. Dr. Hickey kindly investigated the numbers of elderly patients admitted to the Mater Hospital, and we are indebted to the Superintendents of the six Mental hospitals for data concerning their elderly patients. There were more old people (1,716) in these six hospitals than in all the general hospitals.

Social Conditions.

The following estimates have been made subject to certain sampling errors which are explained in detail by Dr. Cheeseman in the report. There are about 180,000 persons aged sixty or over in the population of the province—about 13 per cent of the total population, and it is to be expected that this proportion will rise gradually. We have reason to believe that some 12,000 of these old people living in their own homes, or lodging with others, at present are incapacitated by age or illness to such an extent that they are dependent on relatives or friends for their daily needs. About one-third of this number are sufficiently well placed to be able to live the rest of their lives comfortably at home whatever befalls; but about one half of them (5,600), due either to social or medical circumstances, have such a precarious hold on their present existence that unless some form of home help or improved domestic conditions are forthcoming a demand for institutional care may be made at any time to help the patient or to relieve an exhausted relative. This conclusion is based on the fact that two-thirds of the "helpless" sample members in the survey from whom this estimate is made were living with only one other person to look after them, and of the remainder some lived alone, some were dependent on men rather than women to look after them, and some were in overcrowded or otherwise undesirable home conditions. Should a demand for institutional care be made from this group, about one-third would require residential home care, one-third would be bedfast invalids, and one-third would fall between these extremes, requiring supervision but not skilled nursing care.

As individuals grow older the security of their existence in their own homes becomes influenced by factors which may play little part in their earlier lives but assume increasing significance with age. It is surprising, sometimes, to witness the difficulties which old people are prepared to contend with in their desire to remain in their homes, but the incidents which precipitate the breakdown of a precarious hold on a home in old age may be equally remarkable. Perhaps the three most important factors determining the fate of an old person in their declining years are Health, Help, and Housing, and when a crisis arises due to any one of these, the others must be considered in plans to meet it.

The illnesses, degenerative changes and accidents which beset old folks in their declining years are too well known to you to require further discussion. Some mention has already been made of the need for domestic Help, but I should add that here as in England about 98 per cent of old people live in their own or other people's homes, so that in Sheldon's words "the problems of old people in the mass are domestic rather than institutional." We found that about 10 per cent of the sample in the social survey were living alone, and relatives were looking after 59 per cent of the old women in Belfast, 42 per cent of those in rural areas, and 65 per cent of all the old men. This adds weight to Sheldon's contention that "the burden of old age to be anticipated in the future can never be dealt with by a purely caretaker policy of providing sufficient homes and institutions—the burden will remain a domestic one" (Sheldon, 1950). Indeed, domestic help is much more widely needed than nursing care. Relatives, and especially the younger ones, must be considered in any scheme for the betterment of old age for they so often carry a grossly unfair burden in these days. The "good neighbour" must not be forgotten either, for should they, or the many willing and self-sacrificing relatives, find themselves unable to cope in the future with the elderly dependents they care for at present, State provision on a vast scale would be required to replace their services.

In the survey it appeared that Housing plays little part in determining the future prospects of an old person. None the less, housing conditions are bound to be considered and some interesting findings emerged from the survey relevant to this.

1. In Belfast only one half of the houses visited had both hot and cold water supplies laid on, the remainder having either a cold tap in the yard or in the kitchen premises. One house had no water laid on at all. In the country naturally conditions are worse, only one quarter of the homes having hot and cold water, one half having cold water alone, and the remainder having no piped water supply. A quarter of these latter homes are four hundred yards or more from the nearest well.

2. Deficiencies in the water supply are closely related to unsatisfactory sanitation. Only half of the houses in Belfast had a water closet in the house, the others depending on what is very often a most insanitary contrivance in the yard. In the country districts about one quarter of the houses visited had an indoor

W.C. and one quarter had no sanitation at all. The problem of keeping an elderly invalid clean, of laundering clothing and bedclothes, and the difficulties to be overcome by an old person, even when fit, in attending to their daily needs in some of these homes need no further comment.

3. Overcrowded homes are another problem. In Belfast, for example, 30 per cent of the married men seen in the survey were obliged to share their bedrooms and sometimes even their beds with other persons besides their wives.

If the health and welfare services are to achieve success in their plans for the care of old people in the future, the housing authorities must devise more ambitious projects than those existing at present for specially designed and convenient dwellings for old people. Special flats and small houses are being built by the Housing Trust, but they are needed on a much larger scale than is generally recognised.

Unfortunately, no information about common lodging houses was acquired in this part of the survey, but Miss Sargaison, our almoner in the Unit, has long been interested in the large numbers of old pensioners living an independent life in common lodging houses and, with the approval of the Hospitals Authority, on her own initiative, has undertaken a survey of this group. Our report on old people in Northern Ireland would not have been complete without this information, and we appreciate the encouragement given by the Belfast Corporation Welfare Committee and their permission for Miss Sargaison to visit the lodging houses registered with them.

Before starting this survey I believed that there must be many old people who have tried to get into Homes or hospital, and have been refused admission either because of lack of vacancies or because they were not fit enough for a resident home and not ill enough for hospital. This seems to happen quite often : one old man whose arthritis restricted his activities and added to his apparent age, returned disconsolately after being turned down at an "election" for admission to a certain Home for old people and remarked bitterly : "It's Marathon runners they want in yon place." However, the survey did not show any great demand for institutional care which is not being met. We were careful to qualify this finding in the survey report by the comment that this does not mean that there is not a widespread need for such care. The need was most certainly found among the sample members. There are several possible explanations for this unexpected finding.

1. The lingering suspicion in the older generation of implied pauperism if admitted to any sort of home or institution. Such feelings are appreciable in Belfast where, even now, the best residential accommodation available under welfare auspices is in the old Workhouse. (There is a widespread misconception among doctors in Belfast that the old infirm wards, or "House" of the Belfast City Hospital is a part of the geriatric unit. They are, in fact, administered by the Belfast Corporation Welfare Committee as residential accommodation for old people).

2. The desire of most old people is to remain in their own homes at all costs—even in misery, degradation and squalor. One doctor who looks after the residents of a very good home in the Province says, very truly, that however good the home, and no matter how great the sense of relief and appreciation felt by the residents who gain admission, they are, none the less, a "pressed gang"—there because they must be, and not because they wish to be.

3. Finally, old people are sometimes discouraged from seeking admission to homes or hospitals by relatives or doctors only too well acquainted with the prevailing shortage of hospital beds.

The broad conclusion drawn from the social survey was that if the medical care available from the general practitioner can be supplemented by domestic help and nursing in the homes, and if the homes themselves can be made suitable for such care to be effective in them, the demand on welfare residential homes and on hospitals could be greatly reduced.

The Hospital Survey.

There were 3,368 patients aged 60 and over in general and mental hospitals in Northern Ireland at the time of the survey. Of these, 1,716 were in mental hospitals and 1,625 in general hospitals (excluding maternity and cottage hospitals). This represents 9.6 per thousand of the elderly population in mental hospitals, and 9.1 in general hospitals. Old people occupied 40 per cent of the "general" beds in the district and old Poor Law hospitals, 33 per cent of those in mental hospitals, and 26 per cent of those in erstwhile voluntary and county hospitals. From each patient information was acquired concerning activity prior to admission (and if bedfast, length of time in bed), mental state, nutrition, incontinence, contractures, eyesight and hearing, presence or absence of bedsores and diagnosis. An estimate of the patients' fitness was then combined with the social data, including previous living conditions, the home conditions to which the patient proposed to return, and help available, etc., to reach a forecast of what we called "potential capacity." This, for want of a better term refers to the probability of return home, need for residential home care, or for permanent hospital or alternative nursing care, when both medical and social circumstances have been considered.

The survey was made by the same two people throughout, so that the results are, as far as possible, consistent. We owe much to the medical and nursing staffs of the hospitals we visited. Their interest and constant help in giving information which we could not have acquired in the time available, especially from mentally confused patients, greatly simpified an otherwise tedious task. Despite universal under-staffing in their wards, only 64 patients (4.0 per cent) had bedsores (mostly in the terminal stages of neurological disease or cancer) and, like those who made similar surveys in England, we must pay a tribute to the nursing care given to these patients by an overworked band of devoted nurses.

Medical Conditions in Elderly Patients.

We could not make any statistical analysis of the distribution of disease among the elderly population in general from the diseases encountered during this part of the survey because, of course, only the elderly people in hospital are represented. A few of the more outstanding findings in the survey were these:

There were 287 old people (18 per cent of all those in general hospitals) occupying hospital beds due to combined old age, malnutrition and neglect without mental deterioration or other specific illness.

Trauma appears to be the next most important cause for admission in women, especially fractured neck of femur which occurred in 107 (13 per cent) of the women compared with 20 (3 per cent) of the men.

Diseases of the heart and peripheral vascular lesions (especially cerebrovascular accidents) are next in importance, and are about equally divided among males and females as a cause for admission to hospital.

Arthritis has brought many more women than men into hospital, and 10 per cent of the men were admitted due to prostatic enlargement. Pulmonary diseases appeared to be relatively uncommon as a cause for admission in old age, though patients with pulmonary heart disease were included in the cardio-vascular group, and the incidence of pulmonary disease in the survey numbers awaits more detailed analysis.

Unfortunately space does not permit discussion of many interesting aspects of illness in old people, such as the disastrous and much too prevalent effects of dehydration, the problem of incontinence, and their surprisingly good tolerance for modern surgery and subsequent rehabilitation. One meets occasionally those odd patients, "senile delinquents" as it were, who are mentally sound but "difficult" people and who seem to antagonise their well-wishers deliberately until they become friendless and unwanted anywhere.

Incontinence occurred in 16 per cent of the males and 23 per cent of the females. The incidence is closely associated with confinement to bed and rises with age. There were 220 deaf persons (13.5 per cent) about equally divided between the sexes. It would be a very good practice in hospital wards to have a "ward hearing aid" to lend to deaf patients who lack one, when taking a history or trying to make oneself understood. Affleck (1947) suggested an association between paranoid tendencies and deafness in old age, and in our series it does appear that the incidence of deafness is higher in patients with mental deterioration than in normal persons.

Relatively more women than men are bedfast, and relatively more men than women in hospital are able to walk—points to be considered in future provision for the elderly long-term sick.

It appears that single old people make demands on hospitals reserving beds for the chronic sick out of proportion to those made elsewhere. In the old district hospitals and Poor Law infirmaries there are relatively more single and fewer

married persons than would be expected in the general population, and the proportion of old people who lived alone prior to admission is about 40 per cent — most of them men. This accounts for much of the difficulty experienced in arranging for discharge of older patients from hospital.

DISTRIBUTION OF PATIENTS AGED 60 AND OVER IN GENERAL AND MENTAL HOSPITALS BY POSSIBLE DISPOSAL (MALES AND FEMALES).

Possible disposal	Group A hospitals		Group B hospitals		Total General hospitals		Mental hospitals		TOTAL ALL HOSPITALS	
	No.	Percentage of total	No.	Percentage of total	No.	Percentage of total	No.	Percentage of total	No.	Percentage of total
Home	252	87.8	362	27.1	614	37.8	13	0.8	627	18.8
Resident home	13	4.5	150	11.2	163	10.0	70	4.1	233	7.0
L.S.A. frail ambulant	5	1.7	313	23.4	318	19.6	65	3.8	383	11.5
L.S.A. bedfast (1)	7	2.4	178	13.3	185	11.3	5	0.3	190	5.7
L.S.A. bedfast (2)	10	3.5	236	17.6	246	15.2	43	2.5	289	8.7
L.S.A. psychiatric	—	—	82	6.1	82	5.0	435	25.3	517	15.4
Mental hospital	—	—	17	1.3	17	1.0	1085	63.2	1102	33.0
TOTAL	287	100	1338	100	1625	100.0	1716	100	3341	100

L.S.A. bedfast (1) for patients requiring skilled nursing care.
L.S.A bedfast (2) for patients requiring less skilled attention.

POSSIBLE DISPOSAL OF ELDERLY PATIENTS IN HOSPITAL DURING THE SURVEY.

The table shows the anticipated disposal of 3,341 elderly patients in hospital, assuming that the various types of accommodation suggested for them were available. For convenience, only the results for both sexes combined from the survey report are shown. "Group A" indicates results in the erstwhile voluntary hospitals and county infirmaries and "Group B" those in the old district and Poor Law hospitals.

"Home"—those whose home conditions were good enough to ensure discharge when fit or even as invalids when hospital care was no longer needed. There were 614 patients in this group, and it includes almost 90 per cent. of patients in Group A hospitals compared with less than 30 per cent of those from Group B hospitals. A high proportion of these patients proposed to live with relatives on discharge, and the Almoner visited 200 homes during the survey to confirm whether or not relatives were prepared to accept responsibility. Men more often than women have to face the prospect of living alone on discharge from hospital.

"Resident Home" — patients with no homes or relatives prepared to house them, unfit for the rough and ready life of a common lodging house but fit enough to look after themselves in a residential home without nursing care. There were 163 such patients—relatively more men than women, some of them "inmates" of the Workhouse for years.

"Long-Stay" annexe (L.S.A.).—This term has been introduced to describe accommodation other than hospital beds for patients who, after full investigation and treatment show no further promise of improvement. They no longer need skilled nursing care in hospital, but for social or medical reasons they cannot return home (Brit. Med. Assoc., 1947). The annexes must be under direct supervision of a hospital, admissions being arranged only via hospital wards,

The "Bedfast L.S.A." should take in irremediable patients such as hopelessly crippled arthritic patients, hemiplegics who fail to get back on their feet and others whose activities are limited at most to sitting up in a chair and are, to all intents and purposes, permanently bedridden.

There were 431 such patients in the general hospitals, 414 of them in Group B hospitals, and there was a consistently higher proportion of women than men. Many of them were in the "acute" medical and surgical wards rather than the "chronic block," and it is evident that these hospitals, rather than the old voluntary and county hospitals, continue to serve the community as a convenient refuge for the elderly long-term sick. As the table shows, this applies to every category of "L.S.A. patients," especially the psychiatric group.

Our experience of the management of the irremediable bedfast patient in the past three years suggests that incontinent cases are not only unsuitable for the simple nursing care of the long-stay annexe, but require really skilled nursing care in hospital if they are to be managed properly. In this series about 40 per cent of elderly "bedfast" patients were incontinent, this proportion being equally divided between men and women. It seems, therefore, that about three-fifths of bedfast irremediable elderly patients are suitable for simple nursing care in long-stay annexes rather than hospital beds, and two-fifths need skilled nursing care in hospital.

It is not generally realised how successfully this incontinent (and usually senile) "two-fifths" can be cared for by an interested and efficient staff. They are necessarily heavy nursing problems, but prejudice against working with them is a legacy of the past when large numbers of them were crowded together in vast, unmanageable wards — a veritable Bedlam. We may expect more of these patients from our ageing population and arising from the altered pattern of welfare and hospital services, and it is no longer possible or reasonable to recruit nursing staff to care for them under the old conditions. Some system must soon be accepted in our hospitals whereby the medical supervision and nursing care of such cases may be distributed as a necessary, but relatively light, duty among many doctors and nurses instead of being thrust as a discouraging and heavy routine task on a few.

"Psychiatric L.S.A." The psychiatric group of ninety-nine patients in general hospitals included seventeen who required mental hospital care. The vast majority, however, were suffering from varying degrees of "cerebral incompetence" short of actively anti-social behaviour. They need little more than domestic care and "protection from common dangers" in annexes to the mental hospitals rather than in the overcrowded hospitals themselves. The irrational behaviour of most of these patients upsets the normal elderly people in general hospitals or homes, and they require supervision by staff who have had experience of "mental" nursing. Long-stay annexes for these patients would have relieved 100 general hospital and about 500 mental hospital beds.

"Frail ambulant L.S.A."—these are the patients referred to earlier who are semi-invalid, and though they are still mentally alert, able to attend to their personal needs and to be up and about for the greater part of the day, they need continuous supervision but not skilled nursing care. There are thousands of them living comfortably in good homes throughout the country, but there are many who are in poor circumstances or have no homes, or no relatives willing to accept them. Of these there were 313 in general hospitals during the survey. They include partially recovered hemiplegics, diabetics, patients in early heart failure needing regular digitalis and mersalyl therapy, etc.

They are Cinderellas—unwanted in hospital because they are too fit, unwanted in resident homes because they are not fit enough. Their health varies from week to week, and even from day to day. They are in a "No Man's Land" because responsibility for them is not mentioned by specific legislation in the Health and Welfare Services Acts. When discharged to unsuitable homes their health breaks down rapidly and they return for a longer period in hospital. When given regular meals and the simple medical attention they need, they carry on with restricted activity, but at least up and about and not occupying hospital beds for months, or even years. The care of these patients is essentially a welfare problem with medical implications rather than the reverse.

The result of the hospital survey suggests, therefore, that some 800 old people in general hospitals and 570 in mental hospitals could have been looked after satisfactorily and probably at less cost in alternative accommodation. The Nuffield Surveyors (Nuffield Provincial Hospitals Trust, 1946) estimated that some 8,000 additional hospital beds were required in Northern Ireland — 3,000 of them for the "chronic sick." This estimate may prove to be far in excess of our needs when we have enough suitable housing for old people, better facilities for home care for elderly invalids, or the alternative of residential homes and long-stay annexes for those who must have institutional care other than a hospital ward.

Conclusions.

The problems of old age in Northern Ireland which we must resolve are those confronting every civilized community. In Great Britain we have the advantage of greater experience of slowly progressive and more enlightened health and

welfare legislation than that enjoyed by most other countries in the last century. Our old people have advanced a long way towards financial security as a result of this progress, but much still remains to be done to secure the benefits implied by the term "welfare." We can no longer afford to neglect the aged in health or sickness, though if disregarded, their growing numbers may soon command a formidable vote in favour of those prepared to help them.

The authorities responsible for the well-being of old people in Northern Ireland face many difficulties. Rising costs and restricted materials handicap efforts to renovate or replace condemned housing or antiquated hospital wards. We have not enough uninhabited "stately homes" suitable for conversion into residential homes or long-stay annexes. Reference has been made to gaps in the new legislation, problems such as the frail ambulant patient and the lack of a central unifying authority to replace the relieving officer and tie up loose ends of divided responsibilities.

These difficulties could not all have been foreseen. The social needs of the aged were specially mentioned in the Welfare Act, and Welfare Authorities have a duty to provide residential accommodation for the aged and infirm in need of care and attention not otherwise available to them, and a permissive right to provide domestic help to old people. However, no specific responsibilities for the medical care of the elderly were defined in the Heath Services Act. Thus, although welfare services for the care of old people are making great progress in some areas of the Province, hospital services for the elderly have had no priority in plans for new development. It is true that the home rather than an institution is the natural place for an old person in their declining years, but special hospital units for the treatment and rehabilitation of the elderly sick have long since proved their value to their patients and in relieving pressure on the general hospital wards. It is obvious from the results of the survey that the numbers of old people needing hospital care are too great for them all to be segregated in special units, even were this desirable, but such units are necessary for selected patients, such as hemiplegics who need prolonged supervised convalescence under a regime which general wards do not provide.

This does not necessarily imply that a new speciality need be created, for the medical care of the elderly is a part of general medicine. But there is a need for reorientation of our outlook on the long-term illnesses of old age. It has been truly said that "the 'aged' problem has become young and the 'chronic' problem has become acute." The dual hospital system of the past fifty years arose from advances in highly technical methods of investigation and treatment which could only be applied economically and efficiently in properly equipped centres with a rapid turn-over of patients. The system was successful in these specialised hospitals, but to make the turn-over possible the aged and chronic sick were discharged to the "chronic wards" of the infirmaries where the indiscriminate crowding was equivalent, in a sense, to brushing the dust under the carpet, and equally unsatisfactory. Honest hard-working people fallen on evil days in their old age, having lost their health and their homes, were deprived even of self

respect. The original purpose of our hospitals was to provide skilled nursing care for those who need it, and this must be conserved and reconciled with their functions as special centres for investigation and treatment of short-term sick. Better home care, and sufficient residential homes and long-stay annexes should make this possible. Our first, and I believe, most practical recommendation in the survey report was that an Advisory Committee should be set up to represent all the statutory and voluntary bodies with responsibilities for the care of the elderly, to investigate their special problems, and to co-ordinate the services available to help them. We are moving slowly towards such a service in Northern Ireland, but then everything about old age seems to be slow, except the speed of mental and physical deterioration when an old person is kept unnecessarily in bed.

Acknowledgments.

I am grateful to the Medical Education and Research Committee of the Hospitals Authority who financed the survey, and I owe a special debt of gratitude to the late Sir William Thomson, Chairman of the Committee, not only for accepting the proposal for the survey originally, but for his encouragement and constant interest in our efforts to develop better medical services for the care of the elderly.

My thanks are due to the Northern Ireland Hospital Authority for permission to use data from the survey report and to Mrs. P. G. Taggart for the secretarial work of this paper.

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Cystic Disease of the Lungs

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WITH the increased use of radiography, pulmonary cystic disease is being recognised with sufficient frequency to warrant more than the passing mention given to this condition in textbooks. The condition is regarded by some as a medical curiosity, and because of this and the complications to which the condition frequently gives rise, a wrong diagnosis is often made. It is hoped that the cases to be reported will show that pulmonary cystic disease is not a rarity, and that the description of the many complications encountered will emphasise the many ways in which the condition may present.

With the exception of case 1, the cases to be described were first recognised in infancy or childhood, but pulmonary cysts have been recorded in the stillborn fœtus and in the newborn. There is no doubt that the condition is a clinical entity of congenital origin.

The earliest report of a lung cyst was in a three months old infant described by Fontanus (1638). Grawitz (1880) reported multiple cysts throughout both lungs in a 5½ months old infant. Schenck (1937) made an extensive survey of the literature of cysts of the lung and reviewed 374 cases described up to 1937. Wolman (1930) reported the case of a stillborn fœtus in which the right lung was full of cysts, and Conway (1951) reported a congenital lung cyst found in a child who died five minutes after birth.

Cysts in the lung have been recorded occasionally in association with polycystic disease of the liver, polycystic kidneys, and congenital heart disease, but no special significance can be attached to this infrequent combination.

SYMPTOMS AND SIGNS.

Cystic disease of the lung may remain silent, or may present with a variety of symptoms and signs which vary with the presence or absence of infection in the cysts, with pleural involvement, and with the pressure within the cysts. The pathologist may find a large distended cyst as the cause of asphyxial death in the newborn. An X-ray examination may reveal cystic disease of the lungs in a healthy subject, or in a patient with symptoms common to many diseases of the chest. Such symptoms may vary from moderate dyspnœa on exertion to the symptoms commonly found in suppurative bronchiectasis. Children are particularly prone to present with sequelæ resulting from acute over-distension of cysts. This may result in a pneumothorax, with sudden chest pain, dyspnœa and cyanosis, or, if the cyst is infected, in pyopneumothorax or empyema.

The physical signs of cystic disease of the lung are not pathognomonic, and may be those of cavitation, or pneumonitis, bronchiectasis, empyema or pyopneumothorax, depending upon the intercurrent complication or complications.

Chronic infection of lung cysts may eventually lead to a condition of fibroid lung with deviation of the trachea and gross displacement of the apex beat to the fibrotic side (Case 8, Fig. 8). If diffuse cystic disease of the right lung progresses to a fibroid condition the position of the apex beat may suggest a dextro-cardia. Acquired dextro-cardia may also occur with a large distension cyst in the left hemi-thorax (Case 1, Fig. 1). Andrews (1949) recorded a case in which congenital lung cysts were present in association with congenital dextro-cardia. The electrocardiogram in congenital dextro-cardia shows lead 1 inverted, and leads 2 and 3 transposed.

Radiological Recognition and Classification.

Clinical acumen may lead to a strong suspicion of cystic lung disease, but a chest X-ray is essential for the final diagnosis. Like the history and physical signs, X-ray findings vary with the type of cystic disease present, and with the presence or absence of complications. This clinical survey of ten cases makes no attempt to formulate a classification of lung cysts that would satisfy the morbid anatomist or histologist. It is based on X-ray findings and includes almost all types. The clinical histories illustrate the possible progress of the disease and should facilitate recognition of the condition.

(*a*) *Solitary "balloon" cyst (Giant air cyst).*

This is most often seen in infants but may be seen in adult life. Radiologically this type of cyst often appears to involve the entire lung and to overlap to the contra-lateral side, displacing the mediastinum and heart. Clinically, and radiologically, the diagnosis is spontaneous pneumothorax and a number of unsuccessful attempts may be made to deflate the chest.

Case 1.—In January, 1946, a man, then aged 24 years, was admitted to hospital with a two-day history of cough and blood-stained sputum. On the day of admission he had had a severe stabbing pain in the left side of his chest. The pain subsided in twenty-four hours. An X-ray of the chest (Fig. 1) at that time was reported to show a left-sided pneumothorax. After one month's rest he was discharged home with the condition unchanged. He was re-admitted two months later, and, following unsuccessful attempts to reduce the pneumothorax, was discharged home, where he rested for one year. He was again re-admitted to hospital for a further month, and on discharge, condition still unchanged, was advised to do very light work only. On the 29th January, 1952, he was re-admitted to hospital, complaining of dyspnœa, lassitude and palpitation. Clinical examination showed grossly diminished expansion on the left side of the chest, diminished vocal fremitus, hyper-resonant percussion note and diminished breath sounds on the left side of the chest. The apex beat was in the sixth right intercostal space outside the mid-clavicular line. The heart sounds were normal. On the 1st February, 1952, Mr. Bingham noted during a thoracoscopy, that the appearance was that of the inside of a lung cyst. The lower part of the mediastinal aspect presented a latticed-work appearance and the superior aspect that of a thin, smooth, glistening membrane through which structures could be seen sliding backwards and forwards on respiration. One week later Mr. Bingham performed a left thoracotomy through the bed of the excised sixth rib. When the cyst was punctured it collapsed from the chest wall except at three or four places where it was adherent to the chest wall. It replaced all of the upper lobe except the lingula, which, like the lower lobe, could be inflated

to occupy most of the lower half of the chest. Macroscopically, the excised lobe showed the presence of a unilocular cyst about six inches in diameter and, microscopically, it had a thin fibrous wall outside which compressed lung tissue was present.

(b) Single Medium Sized Cyst.

If uninfected, these cysts often remain silent, but they may give rise to cough from pressure on a bronchus, or to slight dyspnœa from loss of functioning lung tissue (Case 2). If infected, the history is that of bronchiectasis and, radiologically, a lung abscess is simulated (Case 6, Fig. 6).

Case 2.—A girl, then aged six years, was examined in January, 1948, complaining of a chronic unproductive cough. She was otherwise well. There was an area of bronchial breathing at the left apex, but no other abnormal physical signs. An X-ray of the chest (Fig. 2) showed a cystic area with a fluid level at the left upper zone. On re-examination in February, 1952, when aged ten years, her general condition and physique were excellent. She had no cough and, except for slight dyspnœa on moderate exertion, was free from symptoms. Bronchial breathing was present at the left upper zone, but there were no adventitious sounds. She was afebrile, the white cell count was normal, a Mantoux series was negative, and the blood sedimentation rate (Westergren) was only 4 mm. in the first hour. She showed no cyanosis and no clubbing of the finger tips.

A barium swallow showed that the cyst did not communicate with the œsophagus and thus excluded an œsophageal pouch. A para-tracheal cyst was excluded when a bronchogram revealed no communication with the trachea.

A diagnosis of congenital lung cyst was made. In view of the good general health and normal growth operation was not advised, but the patient is being kept under review.

(c) Multiple Cysts of Variable Size.

Radiologically, multiple cysts appear as annular shadows and may occupy variable portions of one or both lungs. They present a "soap-bubble" appearance and in a high proportion of cases are confined to the upper lobes.

(i) Confined to one lung only.

Case 3.—A boy, aged four years, was admitted to hospital on the 15th October, 1951, with a two weeks' history of cough, nausea and general malaise. On clinical examination the respiratory rate was increased, numerous crepitations were audible in the region of the right mid and upper zones of the chest posteriorly, and bronchial breathing was present in these areas. There was no appreciable change in percussion note. An X-ray of the chest was reported to show "Consolidation in right mid zone. Apparent emphysema in right upper zone may be associated with a recent pneumonia but a cystic lung is a possibility." The condition did not respond satisfactorily to penicillin and sulphonamides. The symptoms and signs persisted, but two weeks later, a further X-ray of the chest showed considerable clearing of the right lung. One week later, the boy had no symptoms and there were no abnormal physical signs. An X-ray of the chest (Fig. 3) showed still further clearing of the right lung but persistence of the cystic appearances. Four months later an X-ray of the chest showed that the cystic areas were still present.

(ii) Scattered throughout both lungs.

Case 4.—A boy, aged eight years, was admitted to hospital on the 7th December, 1950, complaining of a constant nasal discharge, recurrent "chest colds," poor appetite and lassitude. On clinical examination the left nasal airway was blocked, and numerous coarse rales were audible in the mid zone of the right and left lung.

An X-ray of the nasal sinuses showed infection of both right and left maxillary antra, and an X-ray of the chest (Fig. 4) showed numerous cystic areas in both right and left mid zones, with fluid levels in the cysts in the right mid zone.

Differential Diagnosis.

Suppurative Pneumonia.

In the author's experience, the multiple cavities of pulmonary abscesses occurring in suppurative pneumonia most frequently give rise to difficulty in diagnosis. The history is helpful. The child with secondary abscesses has been well till the onset of an acute pneumonic illness. Instead of showing the usual rapid response to treatment, the general condition deteriorates, often after as short a period as four to five days, and it is usually evident that complications are present. The adventitious sounds may persist, or be replaced by absent breath sounds with stony dulness due to an empyema which frequently results from the rupture of a sub-pleural abscess. Radiological clearing of these secondary abscesses may take place in three or four weeks, whereas infected cysts are characterised by the static nature of the condition over several months. With treatment, secondary infection of lung cysts may clear but, while serial X-rays may show the cysts to vary somewhat in size from time to time, the cysts do not finally disappear as do abscesses.

Case 5.—A boy had "pneumonia" at the age of four months, from which time he had a chronic cough which was frequently productive. He had a further attack of "penumonia" when aged one year and two months, and again when aged one year and four months. At that time he had a productive cough, and sputum, which was thick and yellowish, amounted to about half-a-cupful daily. On examination growth was normal for a boy of his age. There was dulness on percussion at the left mid and lower zones, and bronchial breathing and numerous adventitious sounds were audible in these areas. There was an appreciable degree of clubbing of the fingers. Three years later the physical signs were unchanged, and an X-ray of the nasal sinuses showed gross infection of both maxillary antra, and an X-ray of the chest showed numerous cysts at the left mid and lower zones and at the right hilum. He was treated with a double maxillary antral wash-out, and a seven-day course of penicillin combined with postural drainage. Six months later, when aged five years, there were no abnormal signs on clinical examination of the chest, but an X-ray of chest (Fig. 5) showed the previous cystic areas still present. In view of bilateral involvement of the lungs with cystic disease operative interference was not advised.

On a single examination during one of the attacks of "pneumonitis," due to infection of these congenital cysts, it would have been extremely difficult to exclude a diagnosis of suppurative pneumonia.

Lung Abscess.

A single uninfected cyst which is partially filled with secretion, and shows a fluid level, may simulate a lung abscess on X-ray (Fig. 2), but the child will look and feel perfectly well. There will be no malaise or toxæmia, no pyrexia, and none of the finger clubbing or purulent sputum, that frequently contribute to the clinical picture of a lung abscess. With an uninfected cyst there will be no leucocytosis. An infected cyst will present the signs and symptoms of a lung

abscess, and only its behaviour over a period of time will enable an accurate diagnosis to be made.

Case 6.—A girl, aged five years, had a history of cough since the age of eight months. On examination on the 9th March, 1950, there was dulness on percussion at the base of the left lung, and bronchial breathing and numerous adventitious sounds were audible in this area. An X-ray of the nasal sinuses showed infection of both maxillary antra, especially the right. An X-ray of the chest showed consolidation at the left base. Two months later the physical signs were unchanged, and an X-ray of the chest showed an area of consolidation with a fluid level at the left base. Four months later the child's general condition was much improved, but she had dyspnœa on moderate exertion. Cough was less severe, though she still had copious purulent sputum which drained easily on postural drainage. An X-ray of the chest at that time showed a cavity containing a fluid level in the left lower lobe, with some consolidation in this area. In April, 1951, the clinical and radiological picture (Fig. 6) was unchanged, and a left lower lobe lobectomy was performed by Mr. Bingham.

Bronchiectasis.

The distinction between acquired bronchiectasis and infected multiple small cysts is sometimes difficult even on histological examination of the lungs. Bronchiectasis is usually located in the lower lobe or lobes and the bronchogram shows dilated bronchi filled with lipiodol. In cystic disease a bronchogram may show normal sized bronchi leading to small cystic areas which are incompletely filled with lipiodol.

Pneumothorax.

Clinically, and radiologically, a "balloon" cyst resembles a pneumothorax. Careful scrutiny for the outline of the cyst, and for delicate trabeculations which are frequently seen coursing across a large cyst, may enable a correct diagnosis to be made. The final decision may be so perpexing as to require thoracoscopy (Case 1).

Emphysema.

In an adult, large emphysematous bullæ can present difficulties similar to those encountered in pneumothorax.

Diaphragmatic Hernia.

A diaphragmatic hernia may rememble a pulmonary cyst on a straight X-ray of the chest, but a barium meal will settle the issue.

Tuberculosis.

A thin-walled distension cavity due to tuberculosis is infrequently a cause of difficulty in diagnosis. A positive Mantoux reaction, and the presence of tubercle bacilli in the sputum, or a positive culture from gastric washings are valuable points in differentiation.

Case 7.—A boy, aged 2½ years, was examined on the 8th September, 1950. He had a history of a chronic productive cough for the previous year. Examination of the chest showed diminished movement of the left side of chest, increased vocal fremitus in left mid zone, and in this area bronchial breathing and numerous crepitations were audible. An X-ray of the chest was reported to show "Patchy

consolidation throughout the left lung, with a suggestion of cavitation in the upper zone. Pulmonary tuberculosis is a possible cause." He was given a ten-day course of penicillin treatment. On re-examination, ten weeks later, there was bronchial breathing at left upper zone posteriorly and tubular breathing at left mid zone posteriorly. An X-ray of the chest showed a large cyst at left upper zone and numerous small cysts at the left base, but no evidence of consolidation. An X-ray of the nasal sinuses showed both maxillary antra to be opaque, consistent with sinusitis. Mantoux 1/100 was negative. Repeated cultures of sputum and gastric washings showed no evidence of tubercle bacilli. The sinus infection responded to treatment, symptoms cleared, the boy's general condition became satisfactory, and an X-ray of the chest (Fig. 7) on the 30th July, 1952, showed the cysts still present in the left lung. A diagnosis of cystic disease of the lung simulating tuberculous cavitation was made.

Empyema.

A loculated empyema resembles a cyst which is filled with secretions or pus. Rupture of an infected sub-pleural cyst gives rise to empyema (Case 9).

COMPLICATIONS.

Repeated attacks of pneumonia, at intervals of weeks, months or years, may be diagnosed in retrospect as episodes of pneumonitis due to recurrent infection of cysts.

Case 8.—A boy, aged ten years, had "pneumonia" when aged eleven months, and again when aged one year and eleven months. Since the second attack of pneumonia he had a chronic productive cough, with thick greenish sputum. He had five further attacks of left-sided "acute pneumonia" between 1945 and 1950. In December, 1945, an X-ray of the chest showed an area of consolidation with cavities in the left side of chest. In September, 1947, a bronchoscopy was done by Mr. Purce, who noted that "The bronchoscope passed easily into left main bronchus and on into lower lobe. No stenosis of bronchi seen. No pus in lower lobe bronchus, but some pus trickled down from upper lobe bronchus." He advised against immediate pneumonectomy, but suggested daily postural drainage, and a review in six months. The boy began to thrive, cough became less troublesome, and sputum less copious. On examination on the 21st November, 1951, there was marked upper dorsal kyphoscoliosis. The apex beat was in the fourth left intercostal space, well outside the mid-clavicular line. Expansion of left side of the chest was grossly diminished. There was dulness on percussion, and areas of amphoric breathing with whispering pectoriloquy were heard over areas of the left lung posteriorly. There were numerous rales at the left base. An X-ray of the chest (Fig. 8) showed marked displacement of the mediastinum to the left with an opacity of major portion of left lung field, and a few transculent cystic areas. An X-ray of the nasal sinuses showed infection of both maxillary antra. A diagnosis of congenital cystic disease of the lung with secondary infection and fibrotic changes was made.

If a cyst is invaded by organisms which are resistant to treatment the condition clinically becomes a lung abscess (Case 6). With infection of a polycystic lesion which is intractable to treatment chronic pulmonary suppuration occurs, and the conditions is clinically indistinguishable from bronchiectasis. As with any chronic suppurative lesion in the chest, cerebral abscess is an occasional complication. Sub-pleural infected cysts are particularly liable to give rise to empyema, and often it is only after the empyema has been treated, and the patient is convalescent, that the underlying cystic disease is recognised.

Case 9.—A girl, aged twelve years, had a chronic productive cough from the age of three years. An X-ray of the chest at the age of eight years showed several cystic areas in the right mid zone. In May, 1949, at the age of nine years, she had a right-sided empyema with Staphylococcus Aureus as the infecting organism. The cysts were not visible until some pus was withdrawn from the pleural cavity. The empyema was treated by right rib resection and drainage. Three years later her general condition was satisfactory, but she still had a cough with a small amount of sputum, and an X-ray of the chest (Fig. 9) showed cystic areas in right mid zone. On examination there were numerous adventitious sounds at the right mid zone and right base. An X-ray of the nasal sinuses showed infection of both maxillary antra. With antral wash-outs for her sinus infection, and postural drainage for her chest condition, she made good progress.

Recurrent pneumothoraces, which are frequently bilateral, should lead to a careful search for underlying cystic disease, as this complication seems to be common, especially with the so-called honeycomb-lung type of lesion. Radiologically, thin-walled cysts are seen distributed uniformly throughout both lungs. The cystic appearance is more readily detected during spontaneous pneumothorax. If bronchitis or bronchiolitis becomes superimposed this type may lead to right heart failure.

Ulceration of a cyst wall occurs frequently, and the patient then presents with a history of a hæmoptysis.

A spill-over of pus from an infected cyst may cause collapse of areas of the lung not directly involved by cystic disease (Case 10). Such collapsed areas may subsequently develop bronchiectasis, thus giving rise to the presence of congenital cystic disease and acquired bronchiectasis.

Case 10.—A girl, aged nine years, had a chronic productive cough from infancy. On examination on the 12th January, 1951, there was early clubbing of the fingers, diminished movement at the base of the left lung, and also dulness on percussion and diminished breath sounds in this area. There was an area of amphoric breathing at the left upper zone posteriorly. An X-ray of the chest (Fig. 10) showed collapse of the right middle lobe and left lower lobe, and a few cystic areas in the left upper zone. A complete Mantoux series was negative, repeated cultures of gastric washings for tubercle bacilli were negative, and no tubercle bacilli were found on direct examination, or on culture, of the sputum. It was assumed that the collapsed lobes were the result of blocking of the appropriate bronchi with pus from the infected cysts.

Prognosis and Treatment.

When there are no complications the condition may remain innocuous, or it may cause dyspnœa as a result of reduction in the functional capacity of the lung tissue. In the absence of symptoms no treatment is required, but asymptomatic cases should have a periodical review to ensure that, should infection supervene, it is detected and treated early.

In an infected case, depending upon the sensitivity of the infecting organism, antibiotics or chemotherapy should be given. Such treatment, combined with postural drainage, may effect some improvement, but permanent cure rarely results. With established infection surgery is advisable. Before any form of surgical treatment is carried out thorough bronchography to determine the full extent of the cystic condition is essential, as the surgical treatment depends upon

the distribution of the cystic areas. If the condition is bilateral no operative treatment is feasible, and palliative measures only are practicable. In the case of a solitary cyst or polycystic lesions confined to one lobe, lobectomy should be advised. For unilateral infected cystic disease involving an entire lung, pnuemonectomy is the only effective treatment.

In all cases of cystic disease of the lung treatment of any sinus infection is essential, as an upper respiratory infection may lead to chronic infection in a hitherto innocent cyst.

Summary.

The clinical and radiological diagnosis of cystic disease of the lungs and its complications are discussed, and ten illustrative cases are described.

The condition is not rare, and the possibility of cystic disease of the lungs should be considered when there is a chronic disease of the chest, or recurrent pneumonia. Prognosis and treatment are discussed.

Acknowledgments.

This article was suggested by Professor F. M. B. Allen. I am grateful to Professor Allen, Dr. T. H. Crozier and the Editor for helpful criticism. For permission to publish cases under their care, I am indebted to Professor Allen (Cases 4, 6, 8, 9 and 10); Dr. S. R. Armstrong (Cases 3 and 7); Mr. J. A. W. Bingham (Case 1), and Dr. T. H. Crozier (Cases 2 and 5). I wish to acknowledge with thanks the support given to this research by a grant from the Northern Ireland Hospitals Authority.

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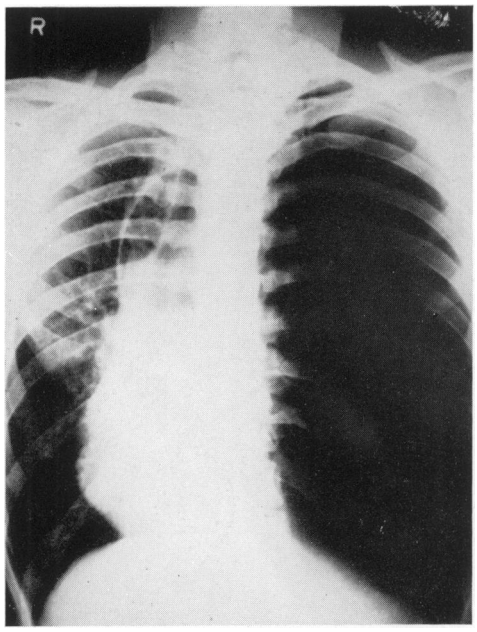

FIG. 1.—Case 1
A solitary balloon cyst in left lung filling the whole of the left chest, displacing mediastinum, and in the upper part herniating through the mediastinum into the right chest.

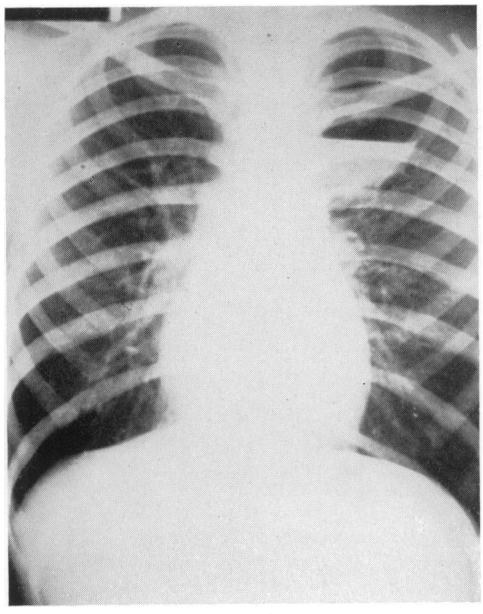

FIG. 2.—Case 2
A cyst with a fluid level is apparent in the left upper zone close to the mediastinum.

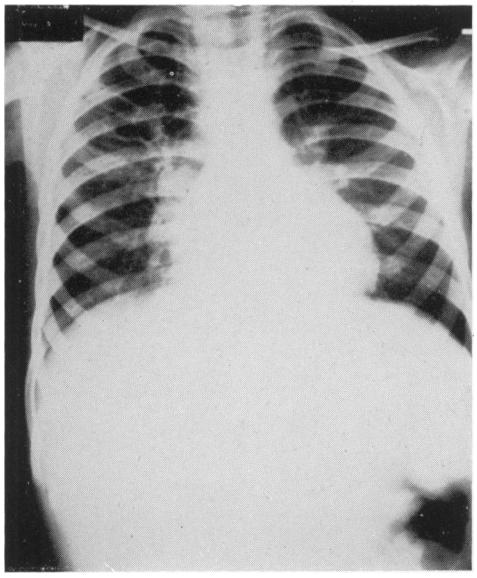

FIG. 3.—Case 3
Thin-walled cystic areas in right mid-upper zone.

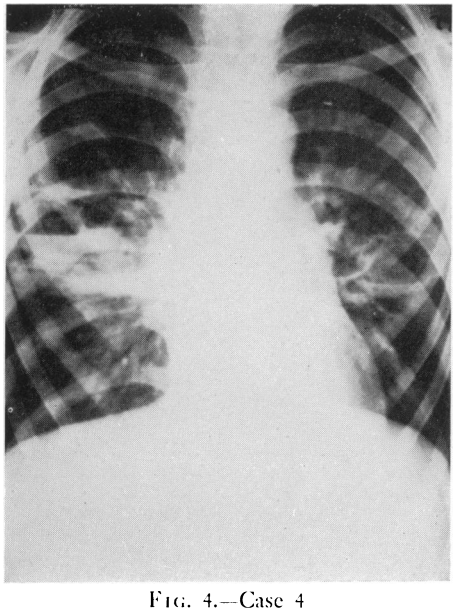

FIG. 4.—Case 4
Several cysts in both right and left mid zones with fluid levels in the cysts on right side of chest.

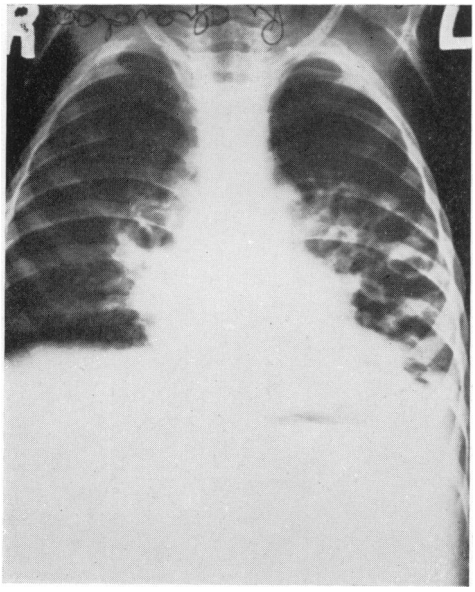

FIG. 5.—Case 5
Numerous cysts at the left mid and lower zones and at the right hilum.

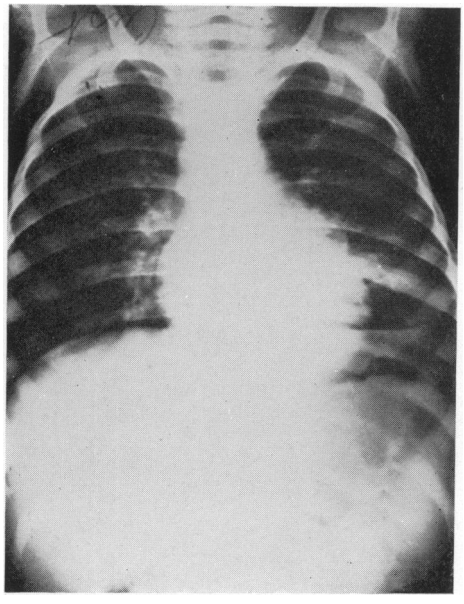

FIG. 6.—Case 6
A cyst with fluid level at base of the left lung.

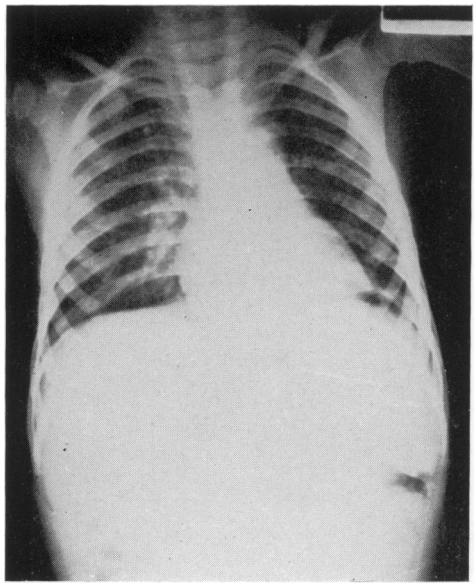

FIG. 7.—Case 7

A cyst below the inner part of the left clavicle and close to the hilum together with small cysts at the base of the left lung.

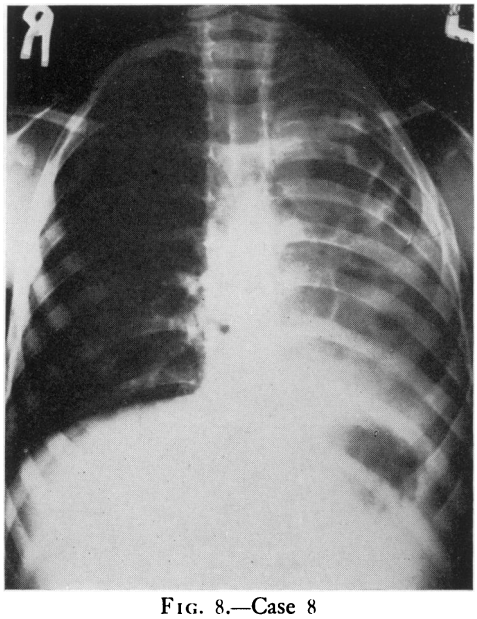

FIG. 8.—Case 8

Translucent cystic areas with opacities and displacement of mediastinum to the left in a case of chronic infection of cysts in the left lung.

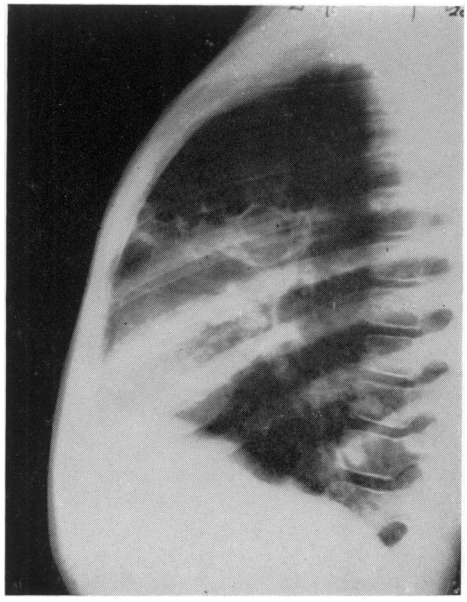

FIG. 9.—Case 9
Several cysts in the right mid zone shown on lateral X-ray of chest.

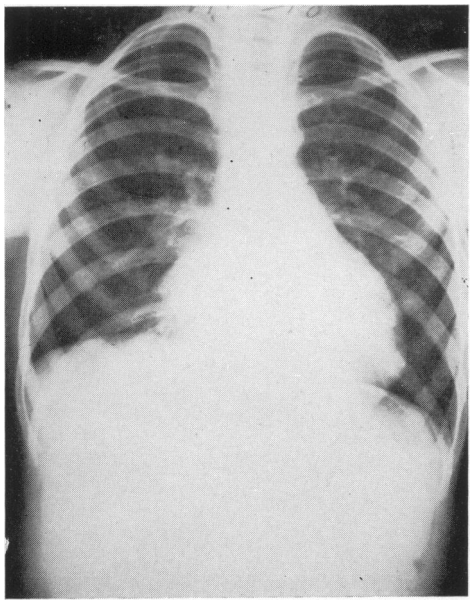

FIG. 10.—Case 10
A few small cysts under the inner part of the left clavicle. There is also collapse of the right middle and left lower lobes.

Farmer's Lung

A clinical account of a disease probably caused by fungi

By PATRICK J. SWEENEY, M.D., M.R.C.P., M.R.C.P.I.

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THE condition variously known as "farmer's lung," "harvester's lung," or "thresher's lung," has received scant attention in the British Isles since it was first described by Munro Campbell in 1932. He described some cases among agricultural workers in Westmorland characterised by dyspnœa and cyanosis, cough with scanty frothy sputum, very slight febrile disturbance, dry râles and ronchi in the lungs, and a radiological picture of a generalised mottling throughout the lung fields. These patients had all been working with hay during the months of April to June, and this had been gathered during the previous summer, which had been exceptionally wet. When this hay was disturbed in the spring much dust was given off, and it was presumed that this dust contained the spores of various moulds or fungi, and was responsible for the patients' symptoms.

In 1938, Fawcitt discussed the disease chiefly from a radiological point of view, and drew attention to the fact that spores are three to five microns in diameter. They are thus approximately the same size as the silica particles which cause lung damage and can readily enter the smaller bronchioles. When describing the miliary pattern seen in some of the X-rays, he stated that this lacked the peripheral distribution and sharp definition and density of the typical silicotic nodule. One distinction from miliary tuberculosis was the tendency for the mid zones and bases to be more affected than the apices. The nodules were also more unevenly distributed throughout the lung fields than in miliary tuberculosis. Unfortunately a post-mortem was only possible in one case, but no evidence of pulmonary tuberculosis was found, though this patient had died two years after admission to a sanatorium.

In 1947, Perry mentioned the disease during the course of an article on lung diseases resulting from occupational dusts other than silica, but no X-rays were shown to illustrate the condition. Outside English literature, the only reference to this disease discovered is the article by Tornell in 1946 on Thresher's Lung. This he described as a fungoid disease of the lung closely resembling pulmonary tuberculosis and sarcoidosis. However, one of his eight patients may have been suffering from sarcoidosis, because X-ray examination showed considerable hilar adenitis and also cystic areas in the terminal phalanges of the hands.

From the above mentioned articles, the following would appear to be the chief features of farmer's lung. It is caused by the inhalation of spore-containing dust from hay or grain, and is characterised by a gradually increasing dyspnœa, which may get worse over a period of months. Dyspnœa would appear to be out of proportion to other symptoms. During this period, any further contact with

"mouldy" hay may produce an acute exacerbation of symptoms, and in some cases the onset would appear to be fairly acute from the commencement. Cough is present but sputum is seldom considerable in amount, at least in the early stages. The blood sedimentation rate (B.S.R.) may or may not be increased, and the temperature may or may not be raised. The patient may be obviously cyanosed. Though the radiological picture is strongly suggestive of either pulmonary tuberculosis or sarcoidosis, tubercle bacilli have never been found, and the tuberculin test is usually negative. Tornell, who investigated his cases in some detail, regarded Monilia albicans as the causative organism, and found it present in the sputum in most of his cases.

The radiological findings vary from a fine reticulation in the earliest stages to a miliary picture closely resembling tuberculosis or sarcoidosis but tending to affect the bases and mid zones more than the apices. If the disease advances, there is an increase in the density of the mottling, extension of opacities due to coalescence of areas of fibrosis, hilar and peri-hilar shadows also increase, and eventually cavitation, bronchiectasis, and diffuse pulmonary fibrosis may result. At this stage there will obviously be no distinctive X-ray appearances. If hæmoptysis, emaciation and fever occur, as they sometimes do, the distinction from pulmonary tuberculosis is extremely difficult.

The summer of 1950 was extremely wet, at least in the North-West part of Ireland, and in many cases the farmers had to leave their hay to rot in the fields. Those who succeeded in saving hay undoubtedly saved a crop that was damp and ideal for the growth of moulds. It would be expected, therefore, that later on, when this hay dried, much spore-containing dust would be given off on handling it, and that conditions for the development of farmer's lung would be ideal. I believe that many such cases in fact occurred in the County of Fermanagh, and that the disease is common enough to justify large scale investigation. The following cases correspond closely to the recorded descriptions of this disease.

Case Reports.

Case 1.—J. R., a farmer, aged 40, first noticed dyspnœa and cough in May, 1951. During the preceding weeks he had been in close contact with stored hay. He was referred to a chest clinic for X-ray examination on the 1st June, but was reassured and his doctor was informed that there was no evidence of tuberculosis. It is now evident that an ill-defined soft mottling, the elements of which vary considerably in size, is to be seen on inspection of this film. The distribution is rather uneven, and the extreme apical zones are quite clear. The vascular trunks at the lung roots are rather heavy and ill-defined, but there is no evidence of glandular enlargement. (Fig. 1). He continued to complain of breathlessness, and during August assisted with hay-making for a short time, but had to desist. There was no previous or family history of lung disease.

On admission to the County Hospital on 21st September he was cyanosed, and there was definite clubbing of the fingers. Fine crepitations were heard throughout both lung fields. His physical examination was otherwise negative. The spleen was not palpable, and no enlarged lymph glands were to be felt. A chest X-ray taken on the day of admission showed a well-marked "miliary" pattern throughout both lung fields (Fig. 2). He ran a slight temperature (99.4) for two days, but was then

afebrile for the remainder of his stay in hospital. His B.S.R. (Westergren) was 9 mm. in one hour, the total and differential blood counts were normal, the total plasma proteins and the albumin-globulin ratio were also normal. The Mantoux reaction was negative to 1 in 100 old tuberculin. X-ray examination of his hands revealed no changes suggestive of sarcoidosis. Repeated sputum examinations for tubercle bacilli were negative, but on numerous occasions yeasts were cultured, and on one occasion a pure growth of Monilia (Oidium) albicans was obtained. Initially, and admittedly for no good reason, Chloromycetin was tried, but as no radiological improvement had occurred by 5th October, recourse was had to simple measures, i.e., daily inhalations, and an anti-spasmodic cough mixture containing potassium iodide. Considerable improvement then took place, and in view of this the potassium iodide was increased to 30 grains three times a day. On the 29th October a chest X-ray showed almost complete disappearance of the miliary pattern, there were no abnormal physical signs in the chest, and he was discharged feeling well and free from dyspnœa. Further X-ray examination on 2nd December, 1951, revealed a complete return to normal.

Case 2.—A. M., a farmer, aged 49 years, was admitted to the County Hospital on 15th October, 1951, complaining of cough and breathlessness. There was no previous history or family history of lung disease.

Towards the end of August, 1951, he had been working with dry dusty hay in his barn, and developed a cough, dyspnœa, and rather vague chest pain. A diagnosis of acute bronchitis was made, and after two weeks in bed he improved sufficiently to be allowed up. He continued to complain of dyspnœa, and was referred for X-ray examination on 5th October, and, as a result of this, his admission to hospital was arranged. This X-ray showed an ill-defined coarse mottling throughout both lung fields, but chiefly affecting the mid zones and the left apex. The hilar vascular markings were considerably increased, but there was no evidence of glandular enlargement. On examination he was slightly cyanosed, and this was most marked on examination of the nail beds, but there was no finger clubbing. No abnormal physical signs were found in the chest. He remained afebrile throughout his stay in hospital, and his general condition and appetite were good.

The B.S.R. of 4 mm. in one hour, the plasma proteins, and blood cell examinations were all normal. The Mantoux test was positive to 1 in 1,000. X-ray examination of the hands revealed no evidence of sarcoidosis. A careful search for tubercle bacilli gave negative results, but on two occasions the sputum cultures produced a heavy growth of yeasts.

Treatment consisted solely of 30 grains of potassium iodide three times a day, and on 29th October considerable radiological improvement had taken place though the lung markings were still increased in the left apex. He was discharged feeling well and free from dyspnœa on the 2nd November. This patient attended the hospital again on 28th December, 1951, and his chest X-ray was then completely normal.

Case 3.—J. G., a farmer, aged 56 years, was admitted to the County Hospital on 14th November, 1951, complaining of dyspnœa. He had been breathless on exertion since January, 1951, when he had been engaged in threshing corn by hand in a small, poorly ventilated room attached to his farm house.

On examination, he was slightly cyanosed, and fine crepitations were present at both lung bases. There was no finger clubbing, and the remainder of his physical examination was normal. X-ray examination revealed a soft ill-defined mottling, chiefly affecting both lung bases. Sputum was scanty and difficult to obtain, but two specimens contained numerous yeasts in addition to a mixed bacterial flora. The total and differential blood counts, the plasma proteins, the albumin-globulin ratio and B.S.R. were within normal limits. He was afebrile during his stay in hospital, and the Mantoux test was negative to 1 in 100 old tuberculin.

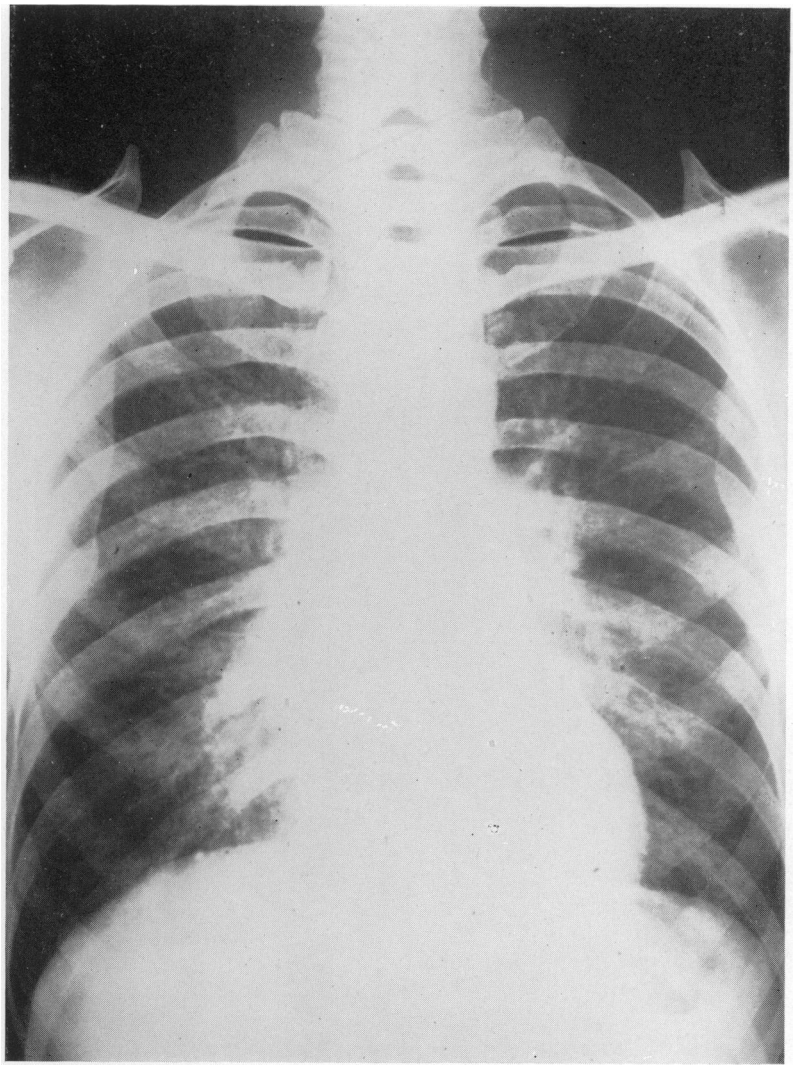

FIG. 1.—Case 1

An early stage showing an ill-defined soft mottling affecting chiefly the mid zones and bases.

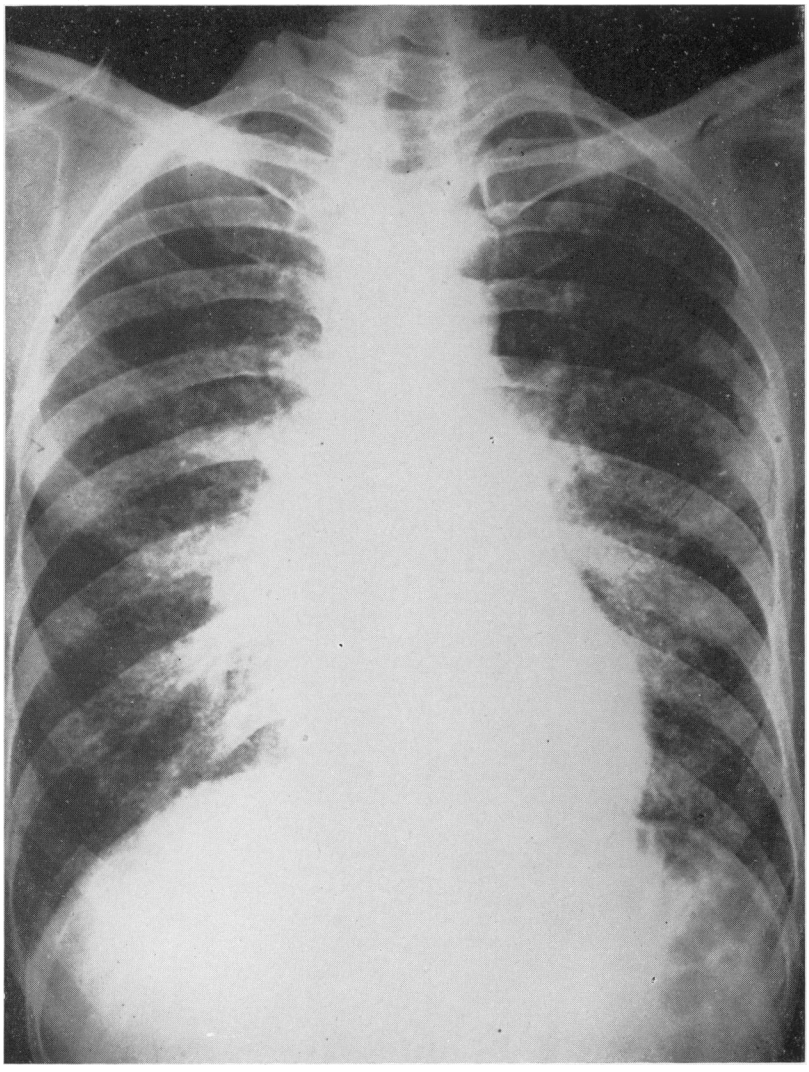

FIG. 2.—Case 1

The hilar markings are increased and a well-defined 'miliary' pattern is present.

Treatment consisted of potassium iodide, 30 grains three times a day, but unfortunately the patient insisted on returning to his farm work on 23rd November. An X-ray examination the day before had, however, shown a slight but definite improvement.

Case 4. — E. C., a farmer, aged 33 years, was admitted to hospital on the 27th December, 1950, complaining of dyspnœa, which had been present for at least six weeks. On numerous occasions during the weeks preceding his admission he had been working with hay. He was afebrile, slightly cyanosed, and fine crepitations were to be heard at both lung bases. His sputum was slightly blood-stained. A chest X-ray revealed a rather ill-defined mottling at both lung bases, and increased hilar markings, but no evidence of hilar glandular enlargement. Treatment consisted of Chloromycetin, but on the 10th January another chest X-ray showed the mottling to be even more marked, and the Chloromycetin was discontinued. Treatment with potassium iodide, 30 grains three times a day, resulted in a considerable radiological improvement, and he was discharged feeling well on the 25th January, 1951. Numerous sputum examinations had failed to reveal any tubercle bacilli, his plasma proteins and albumin-globulin ratio were normal, his B.S.R. was 12 mm. in one hour, and Mantoux reaction was negative to 1 in 100 old tuberculin.

This patient was seen again in December, 1951. He had again become short of breath and a chest X-ray showed a recurrence, but after a fortnight's treatment with potassium iodide he once more made a complete recovery.

Comment.

In addition to the above cases, other patients had been seen, all male agricultural workers, whose chest X-rays were suggestive of severe pulmonary tuberculosis with considerable fibrosis, but repeated searches of their sputum for tubercle bacilli have been negative, and Mantoux tests either negative or very faintly positive. In cases of this kind it would appear that only a post-mortem examination will conclusively settle the diagnosis.

The X-ray appearance of miliary lesions in the chest requires differentiation from that which may be due to sarcoidosis or miliary tuberculosis. Scadding (1950) described seven cases of sarcoidosis characterised by diffuse pulmonary infiltration without gross evidence of hilar lymph node enlargement, but there is no similarity between his recorded descriptions and the above mentioned cases. In the majority of his cases, the abnormal radiological findings persisted for many months, though in two cases there was considerable improvement after four months treatment with Calciferol. It is much easier to exclude miliary tuberculosis, as these cases neither look nor feel ill, all attempts to isolate tubercle bacilli are fruitless, the tuberculin sensitivity is considerably depressed, and the response to iodides is almost diagnostic.

It is of interest to mention that Tornell suggested the possibility that sarcoidosis might possibly be a fungus disease. Kerley (quoted from Scadding) suggested a similar ætiology, largely because of some unusual cases of sarcoidosis where the disease commenced with typical erythema nodosum, X-ray examination of the chest showed bilateral hilar lymph node enlargement, but the Mantoux test was negative. Two similar cases have been seen during the past few months, and in both instances the Mantoux test was negative. One of these

patients, a male aged 23 years, was observed from April to November, 1951. During these eight months the enlarged hilar shadows disappeared and throughout this period the most careful search for tubercle bacilli was negative. The hypothesis that sarcoidosis is a fungus disease is largely based on analogy with coccidomycosis in the primary stage, of which erythema nodosum is frequent.

It is not possible to be certain that these cases are in fact due to infection with a fungus, such as Monilia albicans, and the laboratory investigations and mycology of the sputum cannot be considered adequate. The purpose in describing them is to draw attention to the fact that considerable opportunity exists for the large scale investigation of the incidence of fungus infection of the lung in the agricultural community.

Summary.

Four cases are described where the progress of the disease suggested a fungus infection of the lung. The history of exposure to dust from hay which was probably heavily infected by fungi, the diffuse opacities in the lung fields, and the absence of other infecting agents support this ætiology. A few similar cases described by others as farmer's lung, harvester's lung or thresher's lung are discussed.

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Hepatolenticular Degeneration (Wilson's Disease)

By C. G. WARNOCK, M.D.

A Report of five cases, with Commentary

WILSON'S disease is a heredo-familial disorder, the essential pathological elements of which consist in a cirrhotic state of the liver combined with degenerative changes in the lenticular nuclei of the brain. The term "hepatolenticular degeneration" is therefore aptly precise, but affords little clue to the diversity of the clinical manifestations.

A logical survey of the latter should first emphasise the hepatic side of the picture, since all the evidence shows that the liver is affected long before recognisable nervous symptoms appear. During this "prodromal" phase various puzzling clinical states may present—in particular those of portal hypertension with jaundice and ascites, or of splenomegaly with anæmia and hæmorrhagic phenomena. Not infrequently, death occurs at this early stage and the correct diagnosis only becomes apparent if, and when, another member of the same family shows the fully-developed condition.

In patients who survive such early episodes the liver disease is prone to become quiescent, sometimes for years, before nervous troubles finally commence, and outward signs of hepatic damage are certainly inclined to be less prominent in the later phases of the disease. This adds further to the diagnostic difficulties for, once established, the neurological syndrome itself is easily capable of misinterpretation.

The classical features, originally described by Wilson (1912), are those of extrapyramidal motor dysfunction. This shows itself in the form of a coarse action-tremor of the extremities together with a plastic muscular rigidity, leading to contracture attitudes and, eventually, to true contractures. Pyramidal function remains intact, and there are no sensory disturbances. Dysarthria and dysphagia are prominent symptoms and there is habitually, some degree of emotional facility with a characteristic sustained grin or "spastic smile." Varying degrees of mental deterioration are frequently present. In this type of case, the nervous onset is in early youth or adolescence, and the downward progress rapid, leading to death after a few months or, at most, several years. Gross structural changes in brain tissue are usually found in such cases, including cavitation, or complete destruction, of the lenticular nuclei.

In others, the onset is much later in adult life, and the whole process more gradual and prolonged. Here, the outstanding symptom is tremor, without noticeable hypertonus, and without difficulties of deglutition or articulation, at least until the later stages. An immobile, Parkinsonian facies is common, and speech is monotonous. Involvement of pyramidal pathways, with corresponding physical

signs, may be evident. The cerebral changes tend to be more widespread, but less obviously visible, and may only be demonstrable histologically. Prior to Wilson's discovery of the disease, these cases were thought to be allied to multiple sclerosis, but lacking the characteristic pathology of the latter. Hence the term "pseudosclerosis," originally introduced by Westphal (1883) and Strümpell (1898), which is still sometimes used to distinguish this variety of hepatolenticular degeneration.

Yet another variation of the syndrome is exemplified by cases in which torsion dystonia is a prominent neurological feature (Thomalla; 1918, and others).

Various admixtures and intermediate forms of the above categories have frequently been described and, indeed, the neurological picture may, at times, display any of the characteristics associated with disorders of the basal ganglia in general. Consequently a diagnosis based solely upon neurological evidence is often extremely difficult.

There is, however, one pathognomonic sign which is common to all the aforementioned variants, and is present in about 80 per cent of cases—namely, corneal pigment—the so-called "Kayser-Fleischer ring." But it is not always possible to detect this by ordinary methods of examination and, without slit-lamp microscopy, it may be missed altogether. It is seldom searched for until the patient reaches the neurologist, but is present in some cases before nervous symptoms commence.

The fundamental mechanism responsible for the morbid processes of Wilson's disease is not yet fully understood. But, within the past few years, facts have been established which strongly suggest that it belongs to the group of inborn errors of metabolism.

Certain biochemical anomalies are now known to be constantly present — not only in fully-developed cases but also in the pre-neurological phase, and even in individuals where the liver itself is still apparently normal. Consequently it should in future be possible to identify potential victims. Moreover, there is evidence that a means of controlling these metabolic disturbances may be available. But treatment will require to be given early enough to forestall irreversible structural alterations in the affected organs. The diagnosis, hitherto of more academic than practical interest, has thus acquired a more urgent aspect.

The cases to be described here illustrate several of the clinical varieties referred to above, and provide a useful basis for some comments on the disease in general, and on the recent advances in diagnosis and treatment thereof.

Case Reports.

In a family, observed by the writer since 1938, there were three children — a girl (born in 1925) and two boys (born 1929 and 1937). The parents are alive and well, neither having suffered from any hepatic or neurological complaint.

Amongst the direct and collateral ascendants on the paternal side, however, there were numerous examples of degenerative nervous disorders, viz., senile Parkinsonism, senile dementia, post-encephalitic Parkinsonism, etc., as well as

cases of hepatic cirrhosis, jaundice, hæmatemesis, and sundry other abdominal complaints. On the maternal side neither hepatic nor neurological affections were notable, but the maternal grandmother and one aunt had pulmonary tuberculosis.

Case 1.—Joan C., the daughter, had died in 1936, at age 11. Only brief details of this case were available.

She developed jaundice forty-eight hours after tonsillectomy performed under chloroform anæsthesia. The jaundice rapidly became intense and was accompanied by ascites, hæmatemesis, and subcutaneous hæmorrhages. She died in coma on the fifth post-operative day.

Autopsy was not performed, but subsequent enquiries revealed the fact that ascites had been present prior to the operation. Death was, therefore, presumed to be due to acute liver necrosis precipitated by the effects of chloroform upon an already diseased liver.

Case 2.—John C., the second child, was healthy until aged 8, when he became vaguely unwell with headaches, anorexia, and occasional pyrexia. A year later he was seen by the writer for the first time, the outstanding symptoms being pallor, dyspnœa on exertion, and abdominal swelling.

His appearance was that of a profound toxic state, with ascites, severe anæmia, slight icteroid tinge, and a "swinging" pyrexia. There was œdema of the lower extremities, but no hæmorrhagic phenomena and no lymphatic gland enlargements. Liver and spleen were not palpable. Nothing abnormal was detected in central nervous system, cardio-vascular, or respiratory systems. The urine contained albumen but no bile, sugar, or blood. Ketonuria was absent.

Other findings included a blood sedimentation rate (B.S.R.) (Westergren) of 20 mm. in one hour and negative agglutination tests for enteric and abortus fevers. The blood picture showed R.B.C's. 1,550,000 cu. mm.; Hb.—35 per cent (Sahli); C.I.—1.1; W.B.C's.—25,200 cu. mm., and a normal differential count. Radiographs of the chest were normal.

The condition was thought to be tuberculous peritonitis (cf. — tuberculous history on maternal side).

Treatment in general lines (calcium; vitamins A and D; intramuscular liver) was followed by improvement and disappearance of ascites in six months. The anæmia responded satisfactorily, though tending to fluctuate from time to time in spite of continued treatment and the absence of hæmorrhages.

Leucocytosis persisted, and an increasing predominance of mononuclear cells was evident in successive blood films (reaching a maximum of 65 per cent at one period). This seemed to confirm the original diagnosis. The Paul-Bunnell test was negative.

General improvement was maintained until May, 1939, when he complained of pain and slight swelling below the left knee. X-rays revealed a spontaneous pseudo-fracture at the upper end of the tibia. Two further pseudo-fractures were detected during the following year (lower end of left femur and left fourth metatarsal). Intense osteoporosis of all the long bones was present, but there

was no disturbance of blood calcium—phosphorus balance (e.g., serum calcium 11.75 mg. per cent; inorganic phosphorus 2.5 mg. per cent).

Meanwhile (Jan., 1940) ascites reappeared and persisted for four months. Afterwards the liver edge was palpable at three finger-breadths below the costal margin and the lower pole of the spleen could be felt. Intermittent epistaxis was noted.

In 1941 (March-May) there were repeated attacks of diarrhœa and vomiting with lower abdominal cramps and pyrexia. Later in the year (November) he was acutely ill for four days with high fever, vomiting, diarrhœa, blurred vision, nystagmus and diplopia. No satisfactory reason for this episode could be found, and the symptoms disappeared quite suddenly, leaving no residual neurological signs.

He now remained well until January, 1942, when a transient attack of profuse hæmaturia took place. This left no evidence of renal damage. Gastro-intestinal symptoms continued to be troublesome during the year. The liver was becoming smaller and harder, but the spleen was still palpable. Leucocytosis had decreased (W.B.C's. 13,120 cu. mm.) and there was still a slight anæmia (Hb. 70 per cent —Sahli).

At age 14 (1943) there were signs of oncoming puberty. It was now noticed that his speech was dysarthric and explosive at times. Nothing further developed, however, until December, 1945, when a tremor of the left hand commenced. Shortly afterwards this affected the right hand, and his handwriting at school became quite illegible. The tremor was coarse in amplitude, exaggerated by voluntary movement, and accompanied by rigidity of the arm muscles. At the same time there was emotional instability with a tendency to laugh irrationally. Speech was monotonous, slurring, and explosive. Cranial nerves were normal, and there was no disturbance of pyramidal or sensory functions. The possibility of a post-encephalitic Parkinsonian state was considered (cf. episode of November, 1941, noted above), but progressive deterioration soon cast doubt upon this diagnosis.

Early on 21st November, 1946, he was found in a mentally confused state, with jaws tightly clenched, unable to speak. Involuntary micturition had occurred, and the plantar reflexes gave a temporarily extensor response. It was thought that an epileptiform attack had taken place. X-rays of the skull were normal, and the C.F.S. findings were as follows :—Protein 70 mg. per cent; globulin—nil; cells—nil; colloidal gold—negative; Wassermann—negative.

From this time onwards he became steadily worse. Rigidity and tremor began to affect the legs, and walking was eventually impossible. He came to adopt a more or less fixed posture in bed with asymmetrical contracture attitudes of the limbs. Kayser-Fleischer rings in both corneæ were discovered in April, 1947, thus establishing the diagnosis of Wilson's disease. Speech was reduced to a whisper, and he finally resorted to a system of signs to make known his wants. Dysphagia, commencing in the summer of 1947, resulted towards the end in

complete inability to swallow. A slow sustained smile was his usual response to questions, and he became mentally apathetic and disinterested in his surroundings. Pyramidal function remained intact and there was never any sensory impairment. Occasional incontinence of urine was probably due to inability to communicate his necessity quickly enough.

This neurological status remained practically unchanged from early 1948 until the time of his death, but his progress was punctuated, at intervals, by transient acute episodes. A feature of these, at one stage, was a series of torsion spasms affecting the muscles of the neck and causing violent spasmodic jerks of the head towards the right side. At other times, there were spasms of the whole skeletal musclature, producing momentary opisthotonic arching of the trunk. Repeated vomiting, hiccough, and pyrexia sometimes coincided with such phases and, in one instance, there was profuse sweating of the entire body for several days ("sudoral crisis").

During the last two or three years of his life the spleen could no longer be felt, and the liver was demonstrably reduced in volume.

Apart from the abdominal symptoms noted above, there were no other phenomena referable to liver disease with the exception of occasional epistaxis, and (on one occasion only) rectal bleeding from hæmorrhoids. The diarrhœa of earlier years gave place to persistent and obstinate constipation.

A series of liver function tests, repeated on five separate occasions between November, 1948, to November, 1949, failed to show any clear evidence of hepatic damage. The findings are summarised as follows :—

Bilirubin (mg. per cent)	...	ranging from ...	0.1 - 0.4	
Total plasma proteins (g. per cent)	,,	,, ...	7.0 -10.5	
Albumen (,,)	,,	,, ...	4.0 - 6.0	
Globulin (,,)	,,	,, ...	2.05- 5.3	
Thymol turbidity (units)	,,	,, ...	0.6 - 1	
Alkaline phosphatase (units)	,,	,, ...	5 -15	(King-Armstrong)

Takata-Ara—always faintly positive.

Serum colloidal gold; benzoic acid excretion; and lævulose tolerance tests all gave normal results.

On 27th October, 1949, he was dull and apathetic and had a rapid pulse with fever, and shallow respiration. Swallowing was impossible and the jaws were tightly clenched. Periodic twitchings of face and limbs occurred. There was no loss of consciousness. Glycosuria and albuminuria were present. Blood urea was 70 mg. per cent, and the liver function tests remained as before. Quantities of glucose and amino-acids were administered intravenously but without benefit. The blood pressure fell gradually and the pulse rate increased. Death took place five days later.

Autopsy.—A summary of the main findings is as follows :—

Liver—The surface was irregular and studded with nodules, and on section, a dense network of fibrous tissue was present throughout the organ. Microscopically, the appearance was that of a multiple nodular hyperplasia with minimal and terminal central zonal necrosis.

In the brain there were areas of destruction in the frontal cortex of both sides. Histologically, large cavities were seen bilaterally in the subcortical white matter of the prefrontal area. There were also a few cystic areas in the occipital lobes. The basal ganglia showed shrinkage on both sides, associated with compensatory dilatation of the third ventricle. In sections, there were focal areas of softening and status spongiosus. Minor degrees of damage were found in the thalamus and in the dentate nucleus of the cerebellum. A notable feature, throughout, was the absence of glial proliferation in any of the damaged areas. Alzheimer cells were not present. In the abdomen there was nothing to suggest a previous tuberculous infection.

Case 3.—Hugh C., the younger brother, was normal at birth and developed normally until aged 3, when he was found to have an enlarged, tender liver. From then onwards throughout his childhood, there was a more or less continuous tendency to looseness of the bowels, with spells of anorexia, pasty complexion, temporary loss of weight, and occasional pyrexia.

In March, 1948, at age 10 8-12, Kayser-Fleischer rings were found in both corneæ, and this was confirmed by slit-lamp microscopy. One month later there were signs of ascites with slight œdema of lower extremities, and minimal jaundice.

There was laboratory evidence of liver dysfunction, viz.—Thymol turbidity—10 units; Serum Colloidal gold—positive; Takata-Ara positive; total proteins —7.04 g. per cent; albumen 2.39 g. per cent; globulin 4.65 g. per cent.

Other findings were :— B.S.R. (Westergren) 30 mm. in one hour; blood picture—R.B.C.'s.—3,500,000 cu. mm.; Hb.—66 per cent (Sahli); C.I.—0.94; W.B.C.'s 5,500 cu. mm; lymphocytes 70 per cent.

There were no neurological signs or symptoms and the cerebro-spinal fluid was normal.

Ascites subsided after one month and has not returned since. A dietetic regime was instituted (May, 1948), and has been constantly maintained. It consists of a high protein-carbohydrate intake, with minimal fats. This is supplemented with Vitamins A, B-complex, C, and K. Weekly injections of Vitamin B_{12} (200 mgms.) are also given.

On this routine there was clinical improvement, shown by better appetite, gain in weight, and increased energy. But attacks of diarrhœa still took place intermittently, and liver dysfunction was still evident six months later (November, 1948), viz.—thymol turbidity—8 units; alkaline phosphatase—70 units; takata-ara + + + ; total proteins 7.5 g. per cent; albumen 3.4 g. per cent; globulin 4.1 g. per cent. Carbohydrate tolerance tests (galactose and lævulose) also gave positive results.

Slight hæmorrhagic tendencies had now become apparent—as shown by recurrent epistaxis, small crops of petechiæ, and excessive oozing from needle punctures. Blood coagulation properties were correspondingly deficient, viz.—prothrombin concentration 70 per cent; platelets 70,200 cu. mm. Coagulation time—11 minutes; bleeding time—7 minutes.

Fragility tests gave a trace of hæmolysis in 0.36 per cent Na Cl. — not complete in 0.28 per cent.

Treatment with dimercaprol ("BAL") was begun in May, 1949, and repeated courses of the drug have been administered (see discussion). Progress, to date, has been very satisfactory, and no neurological symptoms of any kind have been observed.

He is now aged 15, physically well developed, and intellectually well above the average. Signs of puberty are advancing. There are no outstanding hepatic symptoms and hæmorrhagic tendencies have receded. The liver remains palpable at two finger-breadths below the costal margin and is hard and slightly tender. The spleen is also slightly enlarged.

Laboratory tests for liver function show marked improvement, which has gradually emerged throughout regularly repeated enquiries, e.g., January, 1952—Bilirubin 0.4 mg. per cent; thymol turbidity—1.4 units; alkaline phosphatase 28 units; total proteins 6.49 g. per cent; albumen 4.4 g. per cent: globulin 2.0 g. per cent; takata-ara—positive; bromsulphthalein retention 9.4 per cent (normal 0—7 per cent).

Apropos of the spontaneous fractures which occurred in Case 2, it is of interest to record that this patient sustained a fracture of the left radius in May, 1950, due to a relatively slight injury. A second fracture, at exactly the same site, resulted from an injury in April, 1952. Radiographs showed normal bone texture. The serum calcium was 11.6 mg. per cent, and the inorganic phosphorus 3.5 mg. per cent. The blood sugar curve after dextrose (50 g.) indicated a normal response with no glycosuria. Acetone, however, was present in three urine specimens. There was no delay in bone union.

Case 4.—The following case was found in another, but unrelated, family in the same district.

Mary S., a married woman with one child (daughter aged 16, healthy). She herself was one of a family of three, of which the first (boy) was stillborn — cause unknown. A sister died at age 17 from liver failure with intense jaundice after one week's illness. Exact details are unobtainable. The parents are alive and well, having had no hepatic or nervous disorder. One paternal uncle died of hepatic cirrhosis.

The patient herself suffered from frequent epistaxis during school years. Otherwise she was quite healthy. She married at age 22 and had one normal pregnancy. No miscarriages. Following her confinement, menstruation became irregular and very infrequent, e.g., 3-6 months intervals, and recently only twice in two years. At age 28, an attack of jaundice took place, with vomiting and abdominal pain, lasting several weeks. This was diagnosed

in hospital as infective hepatitis. Shortly after her discharge from hospital a second attack of jaundice occurred and lasted one week. No ascites occurred on either occasion.

A tendency to bleeding gums was noticed at age 32, and severe hæmorrhage followed dental extractions. Her health then began to deteriorate generally, with loss of weight, anæmia, anorexia, recurrent epistaxis, bruising on slight injury, and intermittent spells of unexplained pyrexia.

In September, 1946, shortly after the dental hæmorrhages noted above, a coarse tremor commenced in the right hand, and soon afterwards in the left. The resulting disability persisted until, in 1948, she was admitted to the Royal Victoria Hospital for investigation (Dr. R. S. Allison). Physical examination gave the following findings :—

A marked tremor of the right hand at rest with a "pill-rolling" movement of the thumb and fingers. Tremor exaggerated by voluntary movement. A similar tremor in the left upper extremity. No muscular weakness anywhere. Movements of co-operation normal. No marked hypertonus in any of the limbs. Gait normal. No retropulsion. Tendon reflexes were all present and equal. Plantars both flexor. Bilateral ankle clonus. The cranial nerves showed no abnormality. The facies, however, was somewhat expressionless, the voice monotonous, and infrequent blinking was noted. No sensory impairment anywhere.

The liver edge was just palpable and the lower pole of the spleen could be felt. No jaundice, ascites, or œdema present. The other systems showed nothing remarkable. Kayser-Fleischer rings were detected in both corneæ and their presence confirmed by slit-lamp microscopy (Mr. F. A. McLaughlin), thus indicating the diagnosis of Wilson's disease.

Liver function tests, at this time, showed no evidence of hepatic dysfunction, viz.—Alkaline phosphatase 6 units; total proteins 7.0 g. per cent; albumen 4.8 g. per cent; globulin 2.2 g. per cent.

Blood picture—R.B.C.'s 3,710,000 cu. mm.; Hb.—99 per cent (Sahli); P.C.V. 45 per cent; W.B.C's. 3,550 cu. mm. (Lymphocytes 37 per cent). Films showed reticulocytes 2.5 per cent; red cell fragility normal.

Glucose tolerance test gave a normal response with no glycosuria.

On discharge from hospital her status remained unchanged, and when seen by the writer for the first time in September, 1949, the physical signs were identical with those described above, with the exception of a marked side-to-side tremor of the head which was now apparent. She was at that time not seriously incapacitated and was still able to do her housework. She evinced a complete aversion to any further investigations or treatment, and maintained this attitude until circumstances forced her to enter hospital in July, 1952.

Meanwhile, however, a gradual but marked deterioration ensued. Tremor of the upper limbs became so uncontrollable that she was unable to feed or dress herself. A similar state of the legs eventually made walking impossible, and she had been more or less bedridden from the summer of 1951. Speech was now difficult at times, but deglutition remained unaffected. Intermittent phases of

pyrexia, with temporary exaggeration of nervous symptoms, were noted and profuse epistaxis occurred from time to time. In the spring of 1952, abdominal swelling was noticed, and this became gradually worse.

She was admitted to Ards District Hospital, Newtownards, on 2nd July, 1952. The findings on admission were as follows :—

Marked ascites, œdema of legs from the thigh downwards, œdema of sacral region and back, extending upwards to the level of the ribs. The skin everywhere was sallow, but not jaundiced. Nipples darkly pigmented. Several dark pigmented moles on the trunk as well as a few minute angiomata. Elsewhere there were some patches of brownish pigmentation (abdomen and legs). Hirsutism was seen on the upper lip and chin. The tongue was raw and bright red. Salivation from both corners of the mouth, with perlêche.

Cardio-vascular system.—Soft mitral systolic murmur. Some tachycardia. Rhythm regular. Blood pressure 140/80 mm. Hg.

Respiratory system.—Dullness both lung bases with poor air entry and diminished vocal resonance. No adventitia.

Central Nervous System.—Facies expressionless, but mentally quite alert and co-operative. Speech somewhat dysarthric and monotonous, but intelligible. Deglutition normal. Constant side-to-side tremor of the head. Kayser-Fleischer rings in both corneæ. Fundi normal. Other cranial nerves normal.

The upper limbs showed little or no tremor at rest, but the least attempted movement caused a violent "wing-flapping" tremor at both wrists, rendering use of the arms impossible. Hypertonus of both upper and lower limbs was present but not excessive, and there were no contractures. The legs were quite powerless. Marked ankle clonus present. All tendon reflexes present. Abdominals not elicited. Plantars both flexor. No sensory disturbances. Incontinence of urine and fæces.

Urine, on admission, showed a heavy B. coli infection with pus and red blood cells present. No casts. A moderate evening pyrexia was noted. Streptomycin (1 gm. daily) was given, in accordance with results of sensitivity tests on the urinary infection.

Liver function tests indicated hepatic insufficiency :—Bilirubin—2.1 mg.; total proteins 6.5 g. per cent; albumen 2.7 g. per cent; globulin—3.8 g. per cent; alkaline phosphatase—8 units; thymol turbidity 5 units; total cholesterol 183 mg. per cent; cholesterol ester fraction 59.6 per cent. Blood urea—68 mg. per cent Blood picture normal. Blood sugar 115 mg. per cent; no glycosuria; no ketonuria.

A high protein-carbohydrate, minimal fat intake was inaugurated together with vitamin supplements. Abdominal paracentesis was performed and pale straw-coloured serous fluid withdrawn.

Two days later she became drowsy and apathetic. Speech unintelligible, deglutition difficult. Tissue jaundice became obvious and quickly deepened. There was continuous fæcal incontinence with diarrhœa. Coma gradually supervened, respiration became stertorous and the lungs œdematous.

Amino-acids and glucose were administered by slow intravenous drip, but without benefit, and on the second day of coma she appeared to be moribund. Nevertheless some improvement then became apparent and, after five days continuous coma, she regained full consciousness. Speech was now quite impossible, and deglutition extremely difficult. Tremor, which had been absent during coma, began to reappear. The urinary infection had disappeared and the temperature settled. Attempts to maintain an adequate protein-carbohydrate intake by tube feeding were made. Liver function tests showed similar findings to those noted above. Jaundice became intense and, on the sixth day after her recovery of consciousness, she again became comatose.

In this condition, death took place the following day (19th July, 1952). Autopsy was performed ten hours later.

The following is a summary of the findings :—

Liver. — Markedly shrunken (770 g. after fixation), and the entire surface nodular. Section showed advanced fibrosis. Histologically, the appearance was that of a multiple nodular hyperplasia, with large areas of regenerated liver tissue.

Spleen.—Was enlarged to about four times the normal size, and revealed chronic venous congestion, with some degree of fibrosis.

Brain. — Appeared generally small. No convolutional atrophy. On vertico-frontal section, there was visible atrophy in the head of the caudate nucleus and the putamen, with consequent widening of the internal capsules.

No cystic areas were found anywhere, but histological changes were widespread and characterised by nerve cell degeneration with glial proliferation, and formation of Alzheimer glial cells (type 2) in many areas, e.g., Putamen, globus pallidus, caudate, frontal and parietal cortex; in the cortex, there was diffuse loss of pyramidal cells.

There were no significant vascular changes in any area.

Case 5. — A third family, also from the same area, provided yet another case. This patient was not seen by the writer personally, but details were kindly supplied by Dr. Bryars, Ballywalter, Co. Down, and Dr. J. A. Smyth, who saw her in consultation.

The following is a short account of her history :—

Mrs. Emily C. was one of a family of six. Two brothers and three sisters, all healthy. Her mother died, aged forty-four, in the Royal Victoria Hospital, Belfast, with a cerebral tumour (Mr. C. A. Calvert). The father is alive and well.

Early in 1944 (aged 22) she noticed swelling of the legs and ankles. Menstruation ceased for several months, and there was a persistent cough. In May of that year she commenced to have crampy abdominal pains and frequent loose watery stools. She was admitted to hospital a short time later and found to have bilateral pleural effusions, ascites, œdema of the legs and lumbo-sacral region, with marked pyrexia. There was a slight anæmia—R.B.C.'s 3,860,000/c.mm.; Hb—72 per cent (Sahli); C.I. 0.94; W.B.C.'s 4,400/c.mm.; lymphocytes 41 per

cent; serum protein levels — total 4.58 g. per cent; albumen 2.45 g. per cent; globulin 2.13 g. per cent.

Fluid aspirated from abdomen and pleura gave negative results from biological tests for tubercle. The effusions disappeared with rest and general treatment and the temperature subsided. No satisfactory diagnosis was arrived at, and she was discharged from hospital, after about a month, apparently recovered.

About a year or so later she again felt vaguely unwell. The spleen was now enlarged and there was a leucopænia (W.C.B.'s—1,248 cu. mm). Pyrexia again evident. Widal—negative; Br. abortus—negative; Blood culture—negative; Van den Bergh — indirect positive; bilirubin — 1.6 units. Renal efficiency tests and blood urea were normal.

A considerable degree of hypothyroidism was evident, with B.M.R. minus 33 per cent—later, minus 40 per cent. Glucose tolerance test showed a fasting blood sugar level of 133 mg. per cent, rising to 285 mg. per cent in the first hour, but reverting to 125 mg. in two hours. No glycosuria was evoked.

Thyroid medication (gr. 6 daily) was instituted and, three months later, the basal metabolic rate was normal.

Neurological symptoms began in June, 1946, with a tremor in the left hand, shortly followed by an unsteady gait. Tremor then extended to the right hand and arm, and the head—and was noticeably exaggerated by voluntary movements. There was hypertonicity of the skeletal musclature, emotional instability, a spastic grin, and marked salivation. Speech was difficult and slurring, and there was some dysphagia. Reflexes were unaffected and there were no sensory changes. Rapid deterioration was observed. Speech became impossible and dysphagia extreme. Painful contractures developed in the legs and, by February, 1947, she was in a state of complete helplessness. She died from inanition a few months later.

Kayser-Fleischer rings were not found in this case, but there is no record of slit-lamp examination having been used.

Autopsy was not performed.

Discussion.

From a neurological aspect, the cases described here require little comment since they followed, for the most part, a very typical course.

Case 2 belongs to the category of "classical" Wilson's disease in conformity with the characteristics already mentioned. The same applies to Case 5, but the absence of other cases in this family, and the absence of corneal pigment rings in the patient, are noticeable. Clinical evidence requires to be unequivocal to justify a diagnosis of Wilson's disease under these circumstances, and anatomical confirmation is always desirable in such a case. Clinical evidence was, in fact, sufficiently convincing in this instance and the diagnosis was confirmed by Dr. Gordon Holmes, to whom the patient was referred. However, in view of present knowledge and for reasons which will be explained later, it becomes necessary

to consider whether cases of this kind can legitimately be classified in the same group as those with corneal pigment.

The severity of the damage to the frontal lobes in Case 2 was a notable feature of the anatomical findings, and was more obvious than the changes in the basal ganglia. But experience has proved, in other cases, that although the lenticular nuclei and neighbouring structures are never spared, there may often be profound and widespread destruction elsewhere. Richter (1948), for example, has drawn attention to the importance of cortical changes (the 'pallial component') and believes that these are almost as characteristic of the disease as are the lesions in basal ganglia.

Case 4 with its late onset, absence of extreme hypertonus, and relatively slow progression, illustrates the so-called "pseudo-sclerosis" type — a distinction to which Wilson himself (1940) was vigorously opposed, since he believed that such cases should be looked upon simply as a more benign and chronic expression of a process which is essentially the same in all variants of the hepato-lenticular group. Nevertheless many authorities (e.g., Denny-Brown, 1946) have recognised, and emphasised, the distinctive clinical features of this form of the disease.

Cases of hepatic cirrhosis, without neurological disorder, are not uncommonly found in "hepato-lenticular" families. In these the eventual onset of nervous troubles is to be expected, and there is no single instance on record where such a patient lived on to any advanced age with the nervous system still intact. But many have died whilst still in this pre-neurological phase — from hepatic failure precipitated either by the severity of the disease process itself, or by superadded noxious agents acting upon the liver, which is notoriously susceptible to them in Wilson's disease. The terms "abdominal Wilson" (Kehrer, 1930), or "forme portale" (van Bogaert and Willcox, 1936) have been used to denote the existence of such a type, also alternatively referred to as the hepatic "forme fruste." The present Case 3 is an example of the kind, and it is justifiable to place Case 1 in the same category—probably also the sister of Case 4.

When corneal rings are present (as in Case 3), and when one or more siblings have already displayed the complete picture, recognition is easy — as it was in this particular instance. But in the absence of these confirmatory data a correct diagnosis during life has hitherto been impossible. Nevertheless it is a type which probably occurs more often than is generally appreciated and a comprehensive survey of the literature supports this view, especially if one takes into account the numerous instances where siblings have died from causes evidently hepatic in origin but of no clearly proven nature — as in two of the families described here.

A much rarer occurrence is the splenomegalic variety. Minor degrees of splenomegaly—as noted in the present series—are quite usual, but sometimes the anatomical and functional disturbances of the organ are so prominent as to dominate the picture, which becomes that of a splenic anæmia with corresponding hæmatological features, hæmorrhagic tendencies, and so forth. These cases

constitute quite a distinct group, of which some twenty instances can be found in the literature. Those reported by Rystedt (1923); Halford (1933); Rabiner et al. (1941), and Richter (1948) may be cited as representative.

A diagnosis of Banti's disease has repeatedly been made in such cases and has been followed up by splenectomy in a number of instances—e.g., those mentioned above. This procedure is contra-indicated however since, although it has sometimes proved temporarily beneficial by way of improvement in the blood dycrasia and the hæmorrhagic phenomena, the onset of nervous symptoms is not correspondingly delayed or averted and has, in fact, often been accelerated afterwards. So far as the writer is aware, this syndrome is not mentioned in the literature on splenic anæmias or on splenectomy and its indications.

The prominence of hepatic symptomatology in the present cases is of some interest. It illuminates what has already been said in the introductory remarks on the importance, from a clinical viewpoint, of the hepatic element. This is a detail which has not often been sufficiently emphasised in standard text-book descriptions of the disease — most of which convey the impression that the hepatic element is seldom outwardly manifest, or at least only to a minor degree. This is an entirely mistaken impression which is attributable, one suspects, to the fact that the disorder is hardly ever systematically observed until such time as neurological disability has appeared, by which time — in many instances — the liver disorder has, indeed, become clinically quiescent.

It is certainly true that the more severe insignia of hepatic cirrhosis — e.g., jaundice and ascites — are relatively uncommon during the evolution of the nervous symptoms and death, from liver failure, such as occurred in Case 4, is not by any means usual in cases with advanced neurological troubles. On the contrary, inanition due to extreme dysphagia (Case 5), acute neurological exacerbations (Case 2), or intercurrent infection are more often responsible for death at this stage. It is, in fact, one of the distinctive features of the cirrhosis in Wilson's disease that advanced functional insufficiency with portal hypertension, appearing early in the course of the disease, can revert to a state of apparent normality and remain quiescent, thereafter, for many years (e.g., Case 2)—during which time all efforts to demonstrate dysfunction by laboratory methods may fail.

An analysis of almost all the existing case reports has been carried out by the writer (1950). This reveals that approximately 60 per cent of cases never exhibit outward evidence of liver disease after the onset of nervous symptoms. In the pre-neurological phase, however, one-third of all the cases had severe hepatic symptoms, many others showed lesser degrees of symptomatology referable to the liver affection, and in only about 25 per cent of cases was the liver disease completely asymptomatic. Jaundice, ascites, anæmia, gastro-intestinal symptoms, and enlargement of liver and spleen are the commonest of these manifestations.

Endocrine dysfunction is sometimes apparent — chiefly in the form of hypogonadism with delayed puberty, signs of sexual under-development, and

amenorrhœa in the female. A marked depression of basal metabolic rate combined with œdema has been recorded in a few instances — e.g., Cadwalader (1914) — Case 4 — in which a diagnosis of myxœdema was postulated, as in the present Case 5.

Another feature of the disease is cutaneous pigmentation, which has been frequently observed and was found to a slight degree in Case 5 also. It usually presents in the form of discrete patches varying in colour from brownish yellow to dark brown, or blueish-grey. Distribution follows no hard and fast rule, and it may appear anywhere on the body, sometimes being universal (e.g., cases of Halford, 1933; André, 1948—Case 5). Its precise nature has never been established, but its occurrence is of interest in view of the important role played by copper in the pathogenesis of the disease and the known influence of copper upon skin pigmentation processes in general (Dowling and Whitlock, 1952).

The metabolism of copper is markedly deranged in Wilson's disease, and it has long been known that it accumulates in the liver and brain (Haurowitz, 1930; Glazebrook, 1945). The question of its relationship to the disease process has been further clarified within the past few years as the result of enquiries in a number of cases, including three of those described here (Cases 2, 3 and 4). Details of the findings in the present cases are the subject of a paper which will appear elsewhere (Warnock and Neill, 1952).

The following is a summary of the facts already recorded in recent publications :—

Large quantities of copper can be recovered from liver and brain tissues at autopsy — particularly from the basal ganglia and other areas most affected by the disease. The amounts found are far in excess of the normal and of anything seen in other hepatic and neurological complaints. (Cumings, 1948; Warnock, 1950; Spillane, et al., 1952). This deposition constitutes a "biochemical lesion" which is potentially reversible — (Denny - Brown and Porter, 1951). Copper is excreted in excessive quantities in the urine, and this output can be still further raised by administration of dimercaprol ("BAL"). — (Mandelbrote, et al., 1948; Porter, 1949; Warnock, 1950). The mobilisation of copper, in response to dimercaprol, is followed by improvement in neurological symptoms and in liver dysfunction. (Cumings, 1951; Denny-Brown and Porter, 1951). Although relapses may occur, there is some evidence that repeated courses of the drug can control the progress of the disease. It is believed, however, that this is more likely in the chronic ("Pseudo-sclerosis") type than in the acutely progressive variety, since irreversible structural changes are more common in the latter (Denny-Brown and Porter, 1951).

Serum copper levels, though sometimes high, are not invariably so, and are of little diagnostic import. Hypercupricuria, on the other hand, is outstanding and has not so far been found in any other disease. Its detection is, therefore, of some diagnostic value. In the writer's Case 3 it has been shown to be present in the pre-neurological stage of the disease—a point not hitherto established.

Kayser-Fleischer rings, which are thought to be caused by copper deposition in the cornea, have been seen to diminish in colour after "BAL" treatment (Denny-Brown and Porter, 1951).

A second metabolic peculiarity has also been shown to be characteristic of the disease—namely, amino-aciduria. This was first described by Uzman and Denny-Brown in 1948. It is a "universal" amino-aciduria, not accompanied by any significant rise in blood non-protein-nitrogen content, and not confined to cases with severe liver dysfunction (Eckhardt, et al., 1948; Porter, 1949; Cooper, et al., 1950). Moreover, it exists not only in fully developed cases with neurological symptoms, but also in the purely hepatic form, and even in siblings with no demonstrable abnormality either in liver or C.N.S. (De Verdier, 1950; Hood and Fagerberg, 1951; Uzman and Hood, 1952). Dent and Harris (1951), however, claimed that amino-aciduria is absent in cases without corneal pigment. If this is true, it would be necessary to segregate these from all other cases of the group, as mentioned above.

The exact causal mechanism of this phenomenon is not, as yet, fully understood, but is seems likely that it is a "renal" amino-aciduria due to a defect in renal tubular reabsorption of amino-acids and comparable to that of the Fanconi syndrome (Dent, 1946; Dent and Harris, 1951).

So far, the relationship between this anomaly and the derangement of copper metabolism has not been explained, but it is clear that it is a constant association in these cases. The amino-aciduria is easily demonstrable by paper chromatography and gives a pattern which is quite characteristic. This was strongly evident in chromatograms done on the urine of the writer's cases 3 and 4 — the only two of the series in which it was possible to carry out the procedure.

Not the least important feature of these two chemical abnormalities is the opportunity they now provide of recognising the disease much earlier than has previously been possible, and of detecting potential victims in families where known cases already exist. Treatment could then be given at a time when it is most likely to be beneficial, i.e., before structural changes in the nervous system have begun. In most of the cases so far recorded the disease was well advanced —and the present Case 3 is the only one in which "BAL" has been given before the onset of nervous symptoms. It is believed, that in this case, the drug may be effective in permanently averting the onset of neurological symptoms, since it can reasonably be hoped that excessive deposition of copper in brain tissues will be prevented thereby.

One final point remains to be mentioned — namely, the occurrence of spontaneous fractures in Case 2. This has been known to happen before — e.g., cases of Economo (1918); Brückner (1925); Kehrer (1930); Lüthy (1931), and André 1948). Marked osteoporosis is found in such cases, and this is not necessarily the result of prolonged immobilisation in bed, for in the case of Economo, for example, a spontaneous fracture was the first sign of the disease. And in the writer's case, although the patient had been inactive for many months a high

intake of calcium and vitamin D had been maintained. Renal glycosuria, being one of the abnormalities not uncommonly found in Wilson's disease, can also be exhibited in conjunction with osteoporosis and amino-aciduria (e.g., case of Cooper, et al., 1950)—although, in fact, glycosuria was absent in the present case. But it may be pointed out that the picture, at the time of the fractures, was that of osteoporosis, enlarged liver and spleen, recent ascites and anæmia — but no neurological symptoms. Had the urine been subjected to the necessary tests at that time, there is little doubt that amino-aciduria would have been discovered. Thus, without attempting any explanation as to why such a state of affairs should arise, it is impossible to ignore the close clinical similarity to the Fanconi syndrome. Dent and Harris (1951) have already drawn attention to points of similarity between the amino-aciduria of the latter and that of hepatolenticular degeneration.

In summary and conclusion, therefore, one would emphasise that Wilson's disease is a condition which, in its earliest stages, may present itself as a perplexing diagnostic problem liable to be encountered by almost any clinician except the one to whom it is most familiar—namely, the neurologist. Yet the disease can be diagnosed, and is probably amenable to treatment, at this stage—but the key to the diagnosis is held by the biochemist.

Acknowledgments.

The writer gratefully acknowledges his indebtedness to the following:—

Dr. J. E. Morison and Dr. D. Harriman for the autopsies on Cases 2 and 4 and the details of the various findings.

Dr. R. S. Allison, for some notes on Case 4, Dr. Brian Henry, Comber, for permission to investigate the case, and to Dr. Hilton Stewart for providing facilities for this in Ards District Hospital. Dr. J. Bryars, Ballywalter, and Dr. J. A. Smyth, for records of Case 5. Dr. Beatrice Lynn for slit-lamp microscopy and advice at various times on ocular problems in these patients.

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REVIEW

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Trochanteric Fracture of the Femur

by R. J. W. WITHERS, M.D., M.CH., F.R.C.S.(E.)
Fracture and Orthopædic Department, Royal Victoria Hospital, Belfast

"The days of our years are three score years and ten,
and if by reason of strength they be four score years,
yet is their strength labour and sorrow."

So says the Psalmist, and how forcibly do his words strike us when considering the conditions which affect the aged. These constitute social, medical and surgical problems with which at present we are not keeping pace.

Of the surgical problems, none is more challenging or more worthy of thought than the trochanteric fracture of the femur—the fracture of the twilight of life. This very special fracture is certain to increase in numbers in any surgical service in the future since we are assured that the percentage of the aged among our population is increasing, and that this increase is likely to continue for many years.

This communication is not a statistical review, nor is it in any way an attempt to compare the end results of conservatism and operative surgery in the treatment of the fracture. It is hoped, however, to point out some of the problems involved and, whilst stressing the benefits of surgery, to describe a simple and satisfactory conservative method of treatment easily applicable in every hospital, whatever the surgical facilities may be.

THE FRACTURE.

Trochanteric fractures (the old extra-capsular fracture) form 60 per cent of all fractures at the upper end of the femur and occur typically in feeble old ladies. These are older, on an average, by 10 years than those who suffer from transcervical and subcapital fractures, which are still reasonably and adequately treated by the use of a Smith-Petersen pin. Since the patients are between 70 and 80 years or more, complications are common and serious, the mortality is high, and the general management is difficult.

The general direction of the fracture is obliquely downwards and inwards across the intertrochanteric line, but the cases vary enormously from a linear crack without displacement to comminuted fractures with two, three, or even more fragments partially or completely displaced. If the medial cortical portion of bone between the under-surface of the neck and the lesser trochanter is not displaced or has been restored after reduction, then the fracture is stable, and perfect anatomical union will occur. If this is not so a coxa vara deformity is inevitable, through collapse of this medial bony pillar, no matter what is done. This problem of instability and collapse occurs in about 30 per cent of all cases,

and it may be that a lack of appreciation of this fact has been partly responsible for disappointing end results.

Where sand-bags and a general "laissez-faire" attitude have been adopted in the management of the case, the shortening and deformity of the limb, and the

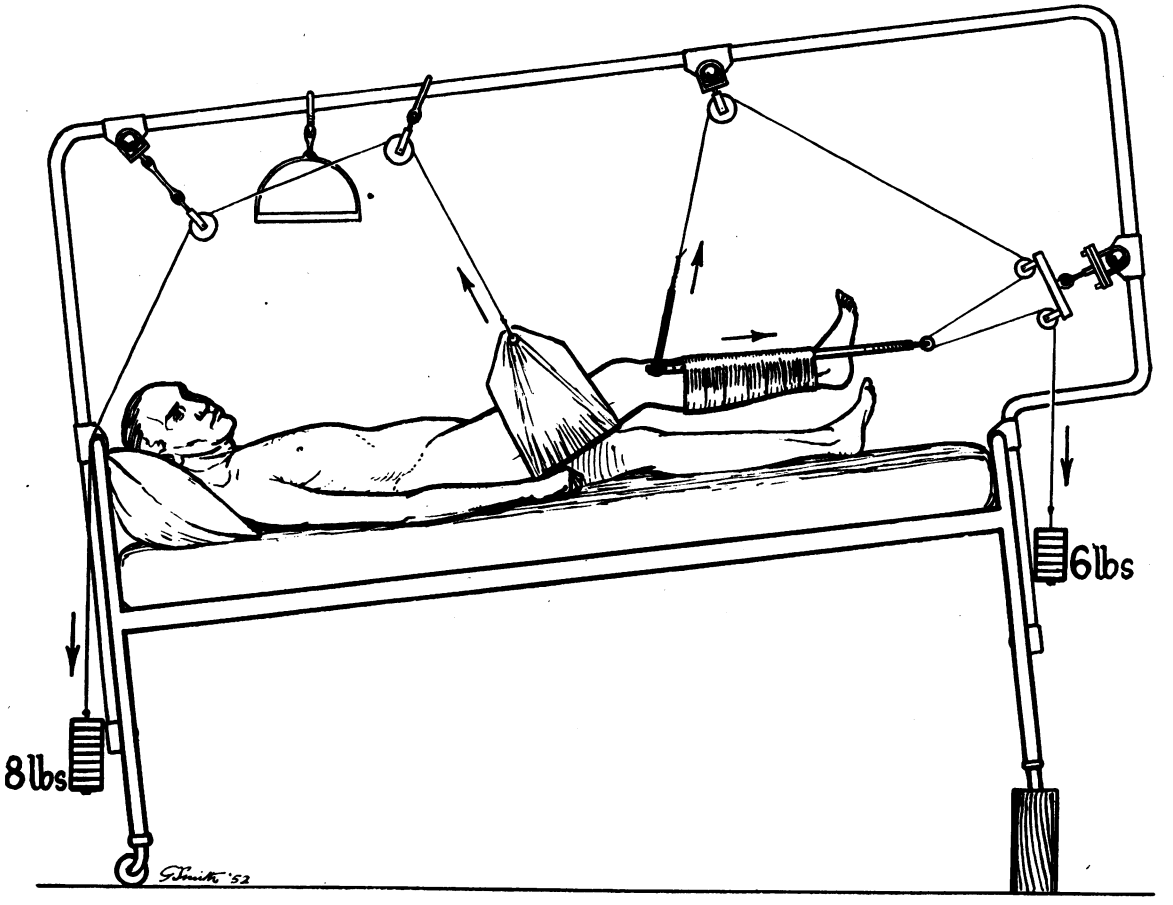

FIG. 1
Showing the general arrangement of the patient in bed with traction on the limb by the method described in the text.

general crippling resulting thereby, may well create a difficult social problem since the patient may be forced to remain in bed at home or in hospital for the rest of his or her life. Nor can one nowadays accept the Thomas splint, the well-leg traction apparatus, or the plaster of paris spica as reasonable approaches to treatment since they too may result in severe crippling. The Thomas splint is unable to prevent external rotation of the limb, the well-leg traction immobilises both legs and there are real dangers of a stiff knee on the uninjured side, whilst the plaster of paris spica by its general awkwardness, its intolerable burden to the patient, and its proneness to produce pressure sores should be a

thing of the past. Gross mental unrest and even acute mania have been seen in any method which completely immobilises the patient in bed, and from time to time cases, treated by one or other of these methods, have had to have their treatment discontinued long before the fractures were united. Old people cannot endure for long, rigid immobilisation of their limbs.

Conservative Treatment versus Surgery.

Since the patients are old and often bodily and mentally feeble, it is not to be wondered at that opinions differ in regard to treatment. Some surgeons are conservative always, whilst others insist on a purely surgical approach — occasionally an obliquely placed Smith-Petersen pin, but usually some form of blade-plate fixation. This current tendency to adopt one method, either conservative or operative, is to be deplored since each case presents an individual problem and many factors have to be considered. Some cases are not viable when admitted to hospital — they will die soon and are better left alone. In the average case, however, the choice between conservative treatment and

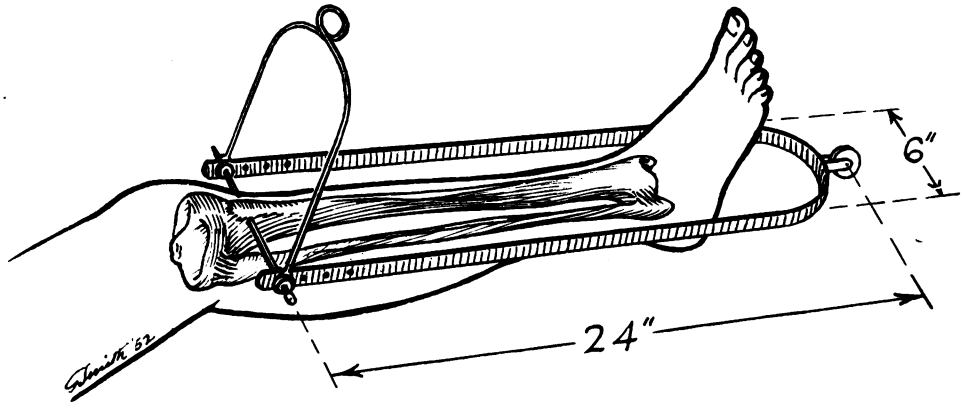

Fig. 2
Showing the arrangement of the two stirrups in relationship to the tibial pin.

operative fixation will depend on the general condition, on the exact type of the fracture, on the type of surgical service available at the time it is required, and on the previous, that is, the pre-accident, functional capacity of the patient. When all these are taken into account it is generally agreed that, provided the fracture is reduced and immobilised in good position, whether by conservative or operative means, most patients who survive will gain solid bony union.

In every hospital good conservative treatment should be, and indeed usually is, practised, demanding first-class nursing, common sense application of well known surgical principles and properly directed and persuasive physiotherapy. This can be made almost a routine, whereas operative treatment may not always be possible. On the other hand, every hospital does not possess the facilities for the operative approach to the problem. Operative fixation of trochanteric fractures as a routine will fail, or at best be a dangerous practice, without a

first-class fracture service. This entails an operating theatre immediately available with suitable radiological facilities, good anæsthetic and blood transfusion services and surgeons trained to orthopædic emergencies and with time to devote to them. The surgical approach must be an emergency one also since after a few days the chance of blade-plate fixation may well be lost through the advent of thrombosis of the limb, pneumonia, general deterioration of the patient, and the real risks of pulmonary embolism from delayed surgery.

The advantages of surgical treatment cannot be denied, however, as they include rapid relief from pain, the complete absence of all restricting apparatus and early mobility. Mobility means not only that the patient can move about in bed immediately after surgery, but can be sitting in a chair within a few days and in many cases can be ambulant in a few weeks. These are indeed advantages which conservatism cannot offer, since any conservative method means a period of eight, ten or twelve weeks in bed. During this time joints may stiffen, pneumonia develop and many nursing difficulties be encountered. Loss of morale and loss of desire to recover function, or even to live, are unfortunately sometimes met with, and these form the most depressing complications of all since they completely defeat the energies and enthusiasm of those responsible for treatment. So let us be operative where the facilities are readily available, and not deny these old patients the real advantages of blade-plate fixation, i.e., of internal suture of their bony wounds — we would not deny them this if the wounds were of the soft parts — but where we must be conservative, either through lack of facilities or on account of the type of fracture, let us embark on a regime which is conservative in the sense that it is non-operative and not in the sense that it means no treatment at all.

Modified Russell Traction
as used in Royal Victoria Hospital, Belfast.

A study of the accompanying diagrams (figs. 1 and 2) will explain better than words the essentials of the method used. A few points only need be stressed :—

1. The patient is first of all anæsthetised and transfused with blood if this is indicated.
2. Under strict aseptic precautions a Steinmann's pin is inserted transversely through the upper end of the tibia.
3. The fracture is reduced by manipulation — this is all important, and it is surprising how accurately the fragments can be replaced in the average case (figs. 3 and 4).
4. Two stirrups are then applied to the Steinmann's pin and the leg suspended, as in diagram, from any ordinary type of suspension frame. The thigh is elevated by a canvas sling of 6-9 inches in width, which is separately supported from the frame by a weight dropped at the head of the bed.
5. As soon as the pain from the fracture has disappeared, and this occurs rapidly, hourly exercises are practised within the range permitted by the

apparatus. These exercises are for the body generally, though particular attention is paid to the knee and foot of the injured leg.

6. Where lethargy is present, the masseuse must persuade, cajole, or even bully the patient into activity, and she must encourage by massage to the limb as a whole, combined with assisted or even passive movements of the knee and foot.
7. In 4-6 weeks after treatment has been started, X-ray evidence of commencing bony union can practically always be demonstrated. Now is the time to persuade the patient to make more vigorous movement in bed, and from this period onwards the hip itself must be exercised along with the other joints.
8. By using this method the nursing difficulties are greatly reduced, the back and hips are easily accessible for toilette and for daily frictions. Bed sores do not develop unless they have already appeared before the case arrives in hospital, re-displacement of the fracture practically never occurs, and knee stiffness is minimal.
9. In 8-12 weeks bony union has advanced sufficiently in most cases to allow removal of all apparatus, and the patient can then sit up in a chair.
10. Rehabilitation in walking comes next, and this requires a wheeled walking machine to be used for short periods several times daily.
11. When the patient's confidence has returned crutches are supplied, and as soon as their use has been mastered the patient can go home.
12. It is doubtful whether a walking caliper in the early ambulatory phases serves much purpose or not. It may be justifiable in younger patients, but for the average case it is awkward, and the patient may find it difficult to use.

This method has been used in the Royal Victoria Hospital, Belfast, for several years, and it has proved to be the most satisfactory conservative method of treatment ever employed in that hospital, both from a surgical and a nursing point of view. In round figures, a reasonable result can be obtained in fully 70 per cent of all cases, and these patients will be ambulant. Fifteen per cent will die from lung, kidney or heart failure, and the rest—some of whom had little or no pre-accident ambulatory function anyway—will have to accept restricted activity or even a chair or bed existence for the remainder of life.

Whilst I prefer operative fixation of the fracture by a blade plate as often as it is possible, I realise that this is not always a safe or easy method. It is for this reason that I have suggested the above conservative approach to the problem and hope it will be found to be of help to those not familiar with it, especially where, for one reason or another, they must preserve a conservative outlook.

I would like to thank Mr. Smith, the artist of the Royal Victoria Hospital, for his beautifully prepared diagrams, which are really the essence of this paper.

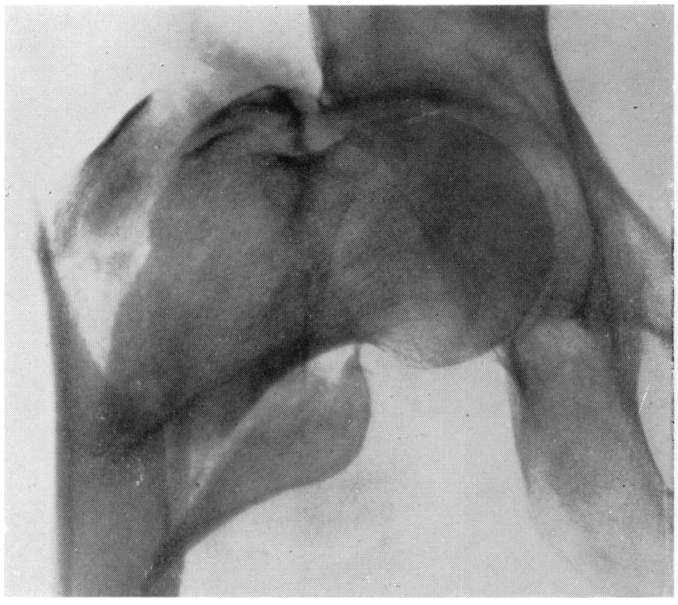

FIG. 3

X-ray of a typical case of trochanteric fracture with several fragments, before treatment.

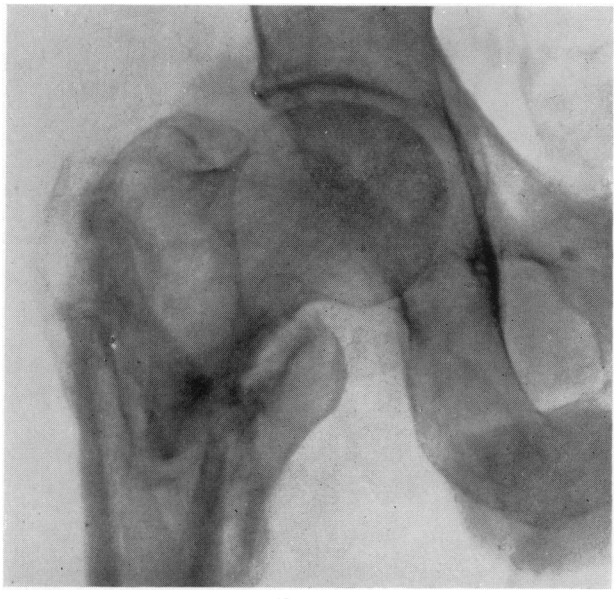

FIG. 4

X-ray showing the same case eight weeks after reduction and immobilisation. Note the maintenance of the good general outline of the femur and well-marked new bone formation.

Long-Stay Accommodation for the Elderly Irremediable Patient

By G. F. ADAMS, M.D., M.R.C.P.
Belfast City Hospital, Belfast

Read to the Medical Society for the Care of the Elderly, 13th March, 1952

THE medical and social problems of old age have attracted much attention in recent years due to a rising proportion of old people in our population, the lack of proper home or institutional care for many of the aged sick and infirm, and the concern among hospital authorities faced with long waiting lists in wards filled with elderly long-term sick. Perhaps the most constructive proposals made so far to solve these problems are those in the Report (1947) of the Committee on the Care and Treatment of the Elderly and Infirm set up by the British Medical Association in 1946. The co-ordinated medical service for the elderly outlined in this report has two objectives—to improve the management of the elderly long-term sick, and to reduce the burden imposed by such patients on the skilled nursing and highly technical resources of hospitals. The lynch-pins of the scheme are :—

(1) The hospital geriatric unit—designed to prevent unnecessary invalidism in old age by substituting active treatment and rehabilitation for the apathetic acceptance of chronic illness in old age, which, in the past, resulted in prolonged confinement to bed with progressive physical and mental deterioration of many potentially remediable patients.

(2) Long-stay annexes — ancillary accommodation not necessarily within the hospital, but supervised from it, and providing simple nursing and domestic care for patients who, after full investigation and treatment, show no further promise of improvement but are homeless or unwanted at home.

The geriatric unit will free hospital beds of some old people previously regarded as bedridden chronic sick and restore them to a life of relative independence, but there remains a hard core of irremediable patients which will grow with our ageing population. While it is wrong that these patients should occupy beds needed for acute illness, it is equally wrong to herd them indiscriminately into large unmanageable wards as so often happened in the past. The long-stay annexe, with accommodation for thirty to forty patients in small wards or cubicles of four to eight beds could avoid this hardship and maintain a homely and contented atmosphere. Admissions would be "screened" socially and medically in the general wards or geriatric unit of a hospital to protect the interests of the patient, and avoid misuse of the long-stay annexe beds. In converted houses used for this purpose practitioners would probably be willing

to share the medical supervision and look after their own patients although the administration of the annexe would presumably be the responsibility of the hospital or geriatric unit through which admissions would be made.

The number of long-stay beds needed for a geriatric unit must depend on the demand made on these beds from the unit, and on the duration of stay of the irremediable patients in them. Little published information is available on these points, and where a new geriatric unit is started it is difficult to decide the proportion of "long-stay" beds to "acute" beds required for the department. Anderson (1951) found that in a group of approximately one hundred incurable elderly patients the average death rate was 20-25 per cent per annum and the hospital population completely changed about every four years. In this paper the probability of stay in hospital of the irremediable bedfast population of the geriatric department of the Belfast City Hospital over a period of $3\frac{1}{2}$ years is analysed, and an attempt made to estimate the long-stay accommodation required for men and for women.

Clinical Material.

When the geriatric unit was opened in 1948, there were 53 men and 77 women aged 60 and over in the wards classified as bedfast irremediable cases—these are called "original" patients. Since then 114 men and 140 women of the same age group have been added to the long-stay wards and are referred to as "acquired" patients. These 384 patients comprise those admitted as long-stay patients with no expectation of recovery (advanced arthritis, neurological disease, inoperable cancer, etc.), and those who failed to respond to treatment and became permanent bedfast cases unable to return to their homes. They represent, then, all patients for whom long-stay accommodation would be appropriate.

It is difficult to pinpoint the stage in the hospital careers of the patients who failed to respond to treatment when they became "permanent long-stay cases." Individual assessment is necessary because of the wide variations in the rate and degree of recovery following illness in old age. Thomson (1949) gives 100 days as the critical period (i.e., the time when it is decided whether an invalid recovers sufficiently to return home, becomes a long-stay hospital case, or dies in hospital). This average may be applicable to the populations of chronic sick wards in the past, but is probably excessive if applied to patients admitted to a geriatric unit. Cosin (1948) found that the average length of stay of 284 patients discharged from Orsett Lodge hospital was 51.6 days, and of 44 who died, 87.6 days. Of 412 patients who were discharged from or died in the geriatric unit of the Belfast City Hospital in 1950, the average length of stay in hospital was 60 days. The average for men who returned home was 59 days and for deaths 54 days; respective figures for women were 70 and 47.

In this series the original and acquired groups are considered separately. Each group is further subdivided into "continent" and "incontinent" sub-groups. This arbitrary classification is used because a persistently incontinent patient needs more skilled nursing than the simple nursing and domestic care of a long-stay

annexe, which need not be equipped to deal with this problem on the same scale as a hospital.

The mean ages of the patients on admission to hospital shows some variation between different groups (Table I) but with the numbers concerned only "original

TABLE I.

AVERAGE AGE OF 384 IRREMEDIABLE BEDFAST PATIENTS IN THE GERIATRIC UNIT.

	ORIGINAL (Patients inherited when the Unit was started).				ACQUIRED (Patients admitted since the Unit was started).			
	Incontinent		Continent		Incontinent		Continent	
	Males	Females	Males	Females	Males	Females	Males	Females
No.	16	38	37	39	64	79	50	61
Mean age	69.56	76.39	71.35	69.69*	75.64	76.22	76.24	73.87

*Significantly lower (at 5 per cent probability level) than average for all groups. Remaining groups homogeneous in respect of age.

continent females" had a mean age (69.69 years) significantly lower than the average for all groups combined (74.36 years) at the conventional probability level of 5 per cent. The average age on admission of the 130 original patients is significantly younger than that of the acquired patients.

PROBABLE DURATION OF STAY IN HOSPITAL.

By analysis akin to the technique of life table analysis, the probable duration of stay in hospital was calculated for each of the eight groups of patients. The small numbers in the groups and the large number of unfinished hospital experiences prevents probabilities of stay in hospital beyond two years being computed. In Table II for original patients and Table III for acquired patients the probability of a patient staying in hospital for six months, one year and two

TABLE II.

"ORIGINAL" PATIENTS.

	Probability of staying in Hospital for 6 months		1 year		2 years	
	Incontinent	Continent	Incontinent	Continent	Incontinent	Continent
Males	0.94	0.95	0.88	0.84	0.75	0.73
Females	0.89	0.95	0.76	0.90	0.63	0 82

years are shown for each sex separately and according to whether or not the patients were incontinent. It must be appreciated that these probabilities are obtained from an "averaging" process and also that the sampling errors will be

relatively large; therefore, small differences must be accepted with reserve, and calculations based on these probabilities can only be approximate. To understand the tables we can consider what we might expect to be the experience of 100 of the original male patients who were continent; 94 of them are likely still to be in hospital at the end of six months after admission, 88 will be there at the end of a year and 75 at the end of two years on the average. In other words 6 of the 100 patients will be discharged or will die in the first 6 months, a further 6 in the second 6 months, and 13 during the course of the second year.

Comparison of these tables is interesting. In the original group the probability of staying in hospital for two years or more is very high whether the patient is incontinent or not. Acquired patients in contrast show a very sharp decline in numbers within six months and only about one-eighth of the male and one-fifth of the female incontinent patients remain in hospital for two years or more while, of the continent patients, about two or three times as many stay as long. It is evident that women have greater "staying power" than men, especially in the continent group, so that more than half of a given population of female continent long-stay patients remain after two years compared with just one-fifth of a similar group if males. Age does not appear to be a factor in this difference between the sexes, as, in the acquired groups, the average ages are not materially different.

The difference in survival rate of the original and acquired patients is probably explained by the lack of discrimination in the old days when the population of a chronic ward included many patients whose ability to live for years in itself was

TABLE III

"ACQUIRED" PATIENTS.

	Probability of staying in Hospital for 6 months		1 year		2 years	
	Incontinent	Continent	Incontinent	Continent	Incontinent	Continent
Males ...	0.30 - 0.75	...	0.18 - 0.51	...	0.12 - 0.22	
Females ...	0.31 - 0.78	...	0.25 - 0.67	...	0.19 - 0.59	

often an indication of potential capacity to respond to rehabilitation. Acquired patients have been more thoroughly screened and their inclusion in the category justified by lack of response to remedial treatment.

The difference between the survival rates of continent and incontinent subgroups of Tables II and III, which is most marked in the acquired males, may similarly be explained by the fact that many original patients became incontinent through confinement to bed. Acquired incontinent patients were mainly those with associated mental deterioration or beyond medical help in the terminal stages of illness. Since acquired patients tend to be older than the original group on admission to hospital, this difference supports the conclusion reached in the survey of old people in hospitals in Northern Ireland (Adams and Cheeseman, 1951)

that incontinence is more closely associated with confinement to bed than age, although age cannot be dismissed as a contributory factor.

These contrasts suggest that estimates of hospital accommodation needed for the chronic sick based on statistics from the old chronic wards may be excessive. A greater proportion of elderly patients will be discharged home to relative independence from a geriatric unit than from the old chronic wards, and long-stay annexes outside hospitals will provide alternative and less costly accommodation for reduced numbers of the homeless long-term sick. For these a geriatric unit needs two types of long-stay accommodation—annexes outside the hospital, and a proportion of beds attached to each ward in the hospital.

1. *Long-stay Annexes Outside Hospital.*

Reference has already been made to these as refuges providing simple nursing and domestic care for the rational, continent bedfast patient. Forty beds is an economical maximum number to cater for, and the nursing staff would know individual patients well and avoid an "institutional" atmosphere. Experience over several years would be necessary to show the exact turnover to be anticipated in an annexe of this size, but an approximate estimate can be made from Table III of the turnover in a forty-bed annex for women. For example, after the transfer of forty continent women to a long-stay annexe outside the hospital, assuming that the time lag between admission and transfer was negligible, the data for acquired patients suggest that about thirteen vacancies would occur during the first year of the annexe's working. During the second year about three vacancies would occur in beds occupied by the patients originally transferred and a further four, approximately, from beds occupied by patients admitted to fill vacancies occurring in the first year. In all, in the second year about seven vacancies would occur. Similarly, if forty continent men were transferred, twenty vacancies would occur in the first year and twenty-one in the second. In other words, to achieve the same turn-over of patients in a male annexe as occurred in a female annexe of forty beds, the former would require about half as many beds.

Accurate estimates beyond two years cannot be made from the life tables owing to unfinished experience. However, even six vacancies occurring in beds occupied by patients originally transferred would result in about eleven vacancies in the annexe during the third year. Anticipating an almost complete changeover in four or five years (as found by Anderson), one would expect some twelve or more vacancies each year in a forty-bed long-stay annexe for women and about twice this number in a long-stay annexe for men.

2. *Long-stay Beds in Hospital.*

Some irremediable bedfast patients need skilled nursing care rather than the simple nursing attention and domestic care of a long-stay annexe. (E.g., patients with persistent incontinence, outbreaks of restlessness, or in the terminal stages of prolonged illness). Hospitals have the staff and the necessary facilities to care for these cases and should accept responsibility for them. A capable sister in charge of a hospital geriatric ward can manage a small group of ten to fifteen

bedfast patients as well as a section of twenty-five beds for remediable elderly sick, and while ensuring proper supervision for both, can give her staff wide experience in general nursing.

From Table III it appears that less than a third of the incontinent patients remain in hospital for six months, less than a quarter for one year and less than a fifth for two years; thus relatively few beds are needed for these patients in excess of the numbers anticipated from the annual turnover of the unit. Reasoning as before, a ward section of fifteen long-stay beds for irremediable female patients might anticipate eleven vacancies during the first year and nine during the second, while for males the figures would be twelve and eleven respectively.

The Proportion of Long-stay Beds Needed for a Geriatric Unit.

About 10 per cent of the total admissions each year to an active geriatric unit fail to respond to treatment and remain as permanent bedfast invalids, unfit or unable to be discharged home. This proportion has shown little variation in our unit during the past three years. Among these patients women exceed men, and continent patients exceed the incontinent of either sex, both in the ratio of one and a half to one (Adams and Cheeseman, 1951). It is possible, therefore, to forecast the approximate number of vacancies needed each year for "long-stay annexe" or "hospital long-stay" patients from the annual admissions to the unit. From the estimates given earlier one can then calculate the approximate number of beds needed for these patients relative to the "acute" beds which maintain the turnover in the unit.

During 1951, 787 patients aged 60 and over (407 men and 380 women) were admitted to the geriatric unit of the Belfast City Hospital. This turnover is maintained by approximately 48 "acute" beds, equally divided between males and females (Table IV). Eighty-five patients (10.8 per cent) remained at the end of the year as bedfast irremediable cases (52 women and 33 men—approximately $1\frac{1}{2}$-1). Some 30 of these women and 20 of the men were suitable for long-stay annexe care, and 22 women and 13 men needed hospital long-stay care due to persistent incontinence or other difficulties.

The estimates of probable duration of stay in such accommodation suggest that to provide the necessary vacancies for similar numbers of patients each year, about 100 long-stay annexe beds are needed for women and about 40 for men, and in the hospital wards about 35 beds are needed for "hospital long-stay" women and 20 for men. These figures represent a need for approximately 5 female long-stay beds and $2\frac{1}{2}$ male long-stay beds relative to each female and male "acute" bed in the geriatric unit.

This analysis of long-stay patients was made because it has long been evident that our geriatric unit has not enough long-stay accommodation for its "bedfast inheritance" from the yearly admissions. Irremediable bedfast cases are encroaching on the few beds available for remediable patients. There are two

reasons for this. First, as shown by Table IV, there are only 150 beds available for long-stay bedfast patients, and the foregoing estimates suggest that some 200 are needed (apart from necessary "frail ambulant" and "pychiatric" long-stay accommodation). Secondly, a geriatric unit of this size cannot cope with the needs of the elderly sick from a population of about 500,000 in and around Belfast.

TABLE IV.

APPROXIMATE DISTRIBUTION OF BEDS WITHIN THE GERIATRIC UNIT AT SIX-MONTHLY INTERVALS OVER A PERIOD OF THREE YEARS.

Category	Male Beds (Average over 3 years)		Female Beds (Average over 3 years)		Total
REMEDIABLE :					
Rehabilitation 16 General Medicine 8	24	...	16 8	24 ...	48
IRREMEDIABLE :					
(Long-stay, Bedfast)	50	...	100	...	150
Total	74	...	124	...	198

Since 1948 the potential capacity for recovery of indiviudal patients has been assessed at six-monthly intervals, and the distribution of patients in the categories suggested by the British Medical Association Committee (1947) has remained remarkably constant. The table shows the approximate proportions of patients in these categories at each assessment—i.e., the number of beds reserved for acute cases relative to long-stay beds.

A further thirty-two male and twenty-five female beds approximately are occupied at any given time by "frail ambulant" or "psychiatric" long-stay cases or those awaiting discharge. The turnover in these beds is small relative to that in the "remediable" beds, but they are an essential part of the Unit.

The accepted ratio of hospital beds needed for the chronic sick is about 1.5 per thousand of population, 25 per cent of them for younger patients and 75 per cent for old people. On this basis Belfast should have some 550 beds for the elderly chronic sick, about 300 more than are available in the City Hospital. This estimate is possibly too high, being based on figures from the old chronic wards rather than on those from active geriatric units. The deficiency, however, results in a disproportionately great demand for the admission to the geriatric unit of irremediable long-stay patients from their homes or from general hospital wards where they occupy beds needed for the investigation and treatment of patients with curable diseases. It is not possible to satisfy this demand and at the same time conserve a proper ratio of beds for remediable patients in the unit.

The development of a geriatric department in the City Hospital would have been more straightforward had some estimates of the necessary long-stay accommodation been available at the outset. It is hoped that these estimates

may prove helpful to departments starting elsewhere, and may stimulate confirmation from other units with longer experience than ours in the medical care of the elderly.

Summary.

The probability of stay in hospital of 384 irremediable bedfast patients aged 60 and over has been assessed by a form of life-table analysis and an approximate estimate made of the long-stay accommodation needed for the geriatric unit concerned.

It is suggested that in a geriatric unit an overall ratio of five long-stay beds to each acute bed is necessary for women and two and a half for men to prevent "silting up" with long-stay cases. Elderly irremediable bedfast cases fall into two broad groups—the rational and continent patients with a long expectation of stay in hospital, and those who are persistently incontinent, usually irrational, and have relatively short time in hospital. The ratio of long-stay beds to acute beds is different for each sex and for continent and incontinent cases.

I am indebted to Dr. E. A. Cheeseman of the Department of Social and Preventive Medicine of the Queen's University, Belfast, for his advice and criticism; to his assistant, Mr. J. D. Merritt, for his work in the statistical analysis; and to Mrs. P. G. Taggart for the secretarial work involved.

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The Tenth International Congress of Dermatology

By J. MARTIN BEARE, M D., M.R.C.P.

THIS Congress was held in London in July, 1952, under the presidency of Sir Achibald Gray. It was the third Congress since 1912, and the only other occasion when London had the honour of entertaining the world's dermatologists was in 1896. Forty-five countries, including the U.S.S.R., were represented, and the attendance was well over one thousand.

The three main topics for discussion were: "The Pathogenesis of Eczema," "A.C.T.H. and Cortisone," and "The Treatment of Tuberculosis of the Skin." Dr. Pillsbury (U.S.A.) indicated the magnitude of the problem of eczema by stating that the majority of World War II troops suffering from skin disease in the tropics were suffering from some form of eczema, and more troops were invalided from the Pacific war theatre because of skin disease than because of war wounds. The prevalence of eczema in civil life is comparable. Professor Miescher (Zurich) expressed doubt as to how far we were justified in regarding eczema as an allergic disease. Dr. Brain (London) discussed the problem of infantile eczema, and stressed the value of sedatives and careful nursing care. Some dermatologists were showing increasing doubt about the part played by food sensitisation in the production of infantile eczema.

The discussion on A.C.T.H. and Cortisone was opened by Dr. Brunsting (U.S.A.), who stressed the fact that these drugs do not eradicate the cause of disease nor do they repair damaged tissue. Rather they act as buffers to reactions of tissue to injury. With prolonged dosage, undesirable side-effects include disturbances of electrolyte metabolism, alterations in the psyche, and signs of hyperadrenalism. There is ever present the liability to develop severe pyogenic infection, which may often be difficult to detect while the patient is having the drug. Dr. Ereaux (Canada) discussed the use of cortisone in the management of pemphigus vulgaris and its variants. He thought that this disease is the only dermatological condition which consistently merits the employment of the drug. He had maintained patients up to two and a half years on cortisone. Dr. Ereaux doubted the wisdom of using cortisone in the treatment of psoriasis, erythrodermias, sarcoidosis and eczematous dermatitis. In the latter condition great care and experience are required to prevent the development of severe erythrodermia when cortisone medication is discontinued. He concluded that in dermatology A.C.T.H. and cortisone can shorten the course of a self-limited condition, control many of the serious illnesses and cure but few of the dermatoses. Dr. Sulzberger (U.S.A.) thought that the effects of the drugs might be designated as "morbidistatic" — in analogy to "bacteriostatic," "fungistatic," etc. He noted that fixed drug eruptions and chronic urticarias respond poorly or not at all. Local application of cortisone to the skin is not effective. He was impressed by the value of these drugs as instruments of dermatological research, but stressed that these powerful weapons can do great harm

as well as good. Dr. Prunty (London) noted improvement in renal function in the early stages of malignant lupus erythematous. On the other hand, healing of necrotic areas in cases of lupus erythematous was prevented by the drugs. One came away from these discussions with the feeling that, even if A.C.T.H. and cortisone were freely available at a reasonable cost in this country, their value in practical therapy is extremely limited, and without intimate hospital supervision their use is never justified.

The symposium on the treatment of tuberculosis of the skin contained papers by Drs. Charpy (France) and Dowling (Great Britain), who independently discovered the value of calciferol in the treatment of skin tuberculosis. Calciferol is still the most valuable agent for these conditions, but emphasis was placed by a number of speakers on the value of combining calciferol therapy with other drugs — especially streptomycin and PAS, and other precedures — especially curettage and cautery. Dr. Wetherley-Mein (London) believed that calciferol acts by having an effect on the patient's tissues rather than by any inhibitory effect on the growth of tubercle bacilli.

Among the two hundred other papers read at the Congress one might pick out three of more than ordinary interest. The work of Drs. Fitzpatrick and Lerner (U.S.A.) on melanogenesis, using labelled tyrosine, would appear to offer in the near future a possible biochemical test for the differentiation of benign and malignant melanomata; the use of psoralens (plant extracts) in the treatment of leucoderma offers a hope that this disfiguring condition will soon be manageable; and Dr. Anderson (London) has been able to demonstrate the great importance of changes in pH of diseased skin, and the part which these changes must play in the chronicity of eczema and in the production of pyogenic skin infections.

Finally, one cannot dismiss the Congress without mentioning the clinical demonstration of 170 cases of rare skin diseases. The individual dermatologist is unlikely to deal with the majority of these more often than once in a lifetime. Dermatologists spend so much of their time looking at the very common conditions — eczema, warts and psoriasis — that they must be forgiven for enthusing over the very rare.

PROCEEDINGS OF THE ULSTER NEURO-PSYCHIATRIC SOCIETY, 1951-52

President—Dr. R. S. Allison. **Secretary**—Dr. J. H. D. Millar.

19th October, 1951, at Claremont Street Hospital:

Dr. H. Hilton Stewart and Dr. J. H. D. Millar showed three cases who had in common one very striking feature; that was loss of posterior column sensation in the upper limbs, which was out of proportion to any loss of posterior column sensation in the lower limbs.

Dr. Stewart's patient was aged 68. Her history had started with pains in the occipital region, followed by numbness in the upper limbs, progressive over a matter of weeks. She also complained of some weakness of the legs and dysuria. The history began about four months before admission to hospital, when she was slightly disorientated. The cranial nerves were normal. The upper limbs were grossly ataxic due to the loss of posterior column sensation. Distally in the hands, there was loss of light touch and pain sensation. The lower limbs showed a mild paraparesis, and minimal sensory signs. She was grossly incontinent of urine. All investigations, including lumbar myelography, were entirely negative. Her condition was beginning to mend when she was shown to the meeting.

Dr. Millar's patient was aged 45. Her history was of similar duration and also started with pains in the occipital region and numbness in the arms and slight difficulty in walking. There were, however, no bladder symptoms. Mentally she was quite clear, and at no time was she as ill as the first patient. The main feature was the gross ataxia of the upper limbs and only slight posterior column signs in the lower limbs with minimal weakness and ataxic gait. She has improved. Dr. Millar showed the third case, which was generally agreed to be a case of disseminated sclerosis with the unusual feature of greater posterior column loss in the upper limbs.

The diagnosis of the first two cases was discussed at some length. The possibility of spinal cord compression, due to tumour or platybasia, was unlikely in view of the normal myelography. The lateral distribution of the lesions in upper cervical cord and also the age of onset was unlike disseminated sclerosis. Dr. Harriman suggested the possibility of an atypical Guillan Barré syndrome even with the normal C.S.F. findings. It was generally agreed that this was probably an atypical Guillan Barré syndrome, although by no means certain.

Dr. R. S. Allison showed a very interesting patient who at one time had shown well the symptoms of autotopognosia and anosognosia. This case history will be published elsewhere.

16th November, 1951, at Claremont Street Hospital:

Dr. Millar showed two patients suffering from Unverricht's familial myoclonic epilepsy. The first, a youth aged 19, was bedridden, dysarthric, deteriorated, incontinent and having continuous myoclonic jerks. The history started at the age of 7 with attacks in which he fell frequently, especially downstairs. The condition has progressed steadily despite treatment, and in addition he had frequent major fits. The E.E.G. showed frequent sharp waves, bilaterally synchronous, associated with the myoclonic jerks. At times epileptic complexes were seen. The myoclonic jerks were increased in frequency and violence by photic stimulation. The patient is one of eleven siblings—two brothers suffer from epilepsy. One aged 17 has had three major fits and weekly akinetic attacks, when his "legs suddenly leave him" without loss of consciousness. The other brother is a bright little boy of 10, who had a year's history of major seizures, especially when roused from sleep. Both had similar epileptic complexes in the E.E.G.'s and sharp waves associated with myoclonic jerks with photic stimulation.

The second patient, a married woman of 35, had suffered from jerking movements for seven years. There was also a history of two major fits following confinements. On examination there were frequent myoclonic movements involving the facial and articulatory musculature, giving rise to an intermittent dysarthria. There were less frequent myoclonic jerks of the upper and lower limbs. The condition responded fairly well to phenobarbitone. Her father was dead, but appears to have suffered from parkinsonism, and one paternal uncle also was dead and had suffered from parkinsonism. She had six sisters and one brother, all living. Two sisters had myoclonic epilepsy, both had been examined by Dr. Millar. E.E.G.'s of the younger two sisters show epileptic discharges, bilaterally synchronous, accompanying the clinical myoclonic jerks.

Mr. R. C. Connolly read a paper entitled "Leakage of cerebro-spinal fluid masking the presence of intra-cranial hæmatomata." Four cases were described. All of these had intra-cranial hæmatomata associated with skull fractures, involving either the air sinuses (two cases) or middle ear (two cases). The intra-cranial hæmatomata produced no disturbance of consciousness and no abnormal neurological signs, while C.S.F. leaked from the nose or ears. In the cases of frontal sinus fracture, craniotomy was performed for persistent C.S.F. rhinorrhœa, and large intra-cranial hæmatomata were discovered as chance findings. In the cases of middle ear fracture, and immediately following the spontaneous cessation of the C.S.F. otorrhœa, there was a deterioration in the state of consciousness and hemiparesis appeared. In one case the hemiparesis was ipsilateral, due to a subdural hæmatoma arising from a contra-coup cerebral laceration. All cases recovered after operation and evacuation of the hæmatomata.

It was considered that the leakage of cerebro-spinal fluid facilitated the formation of intra-cranial blood clots by lowering intra-cranial tension. While the leak persisted, the presence of the hæmatomata was concealed.

28th December, 1951, at Claremont Street Hospital:

Dr. J. R. Milliken read a paper: "Psychiatric Aspects of Sleep Disorders in Children." The majority of children examined at the Child Guidance Clinic are found to be suffering from some form of sleep disorder. Organic sleep disorders are of two kinds — one, the narcoleptic syndrome, including cataplexia, sleep paralysis, and sleep hallucinosis, and the other hypersomnia. Recent claims have been made that narcolepsy is in many cases primarily a psychological disorder, and in the experience of many psychiatrists psychotherapy has been used with advantage. So-called idiopathic narcolepsy is rarely found in children.

Sleep disturbances, in which there is no apparent disease of the central nervous system, rarely occur as a single entity but are usually a part of various forms of psychological disturbance. The first type of disturbance is insufficient and restless sleep. The latter is evidenced by jerking movements, crying out, teeth-grinding, sleep-talking and jactatio capitis nocturna. The latter is not to be confused with head-banging, which usually occurs in infants or in imbecile or idiotic children. This type of disturbance is most commonly found in restless, over-active and easily excited children. Treatment must attack factors and situations which tend to drive the patient in the direction of increased motility.

True insomnia is rarely found in children except as a result of bodily discomfort. What is generally called insomnia in children is usually an unwillingness, rather than an inability, to go to sleep, and often results from faulty training in sleep habits. Much more fundamental is the sleeplessness which results from disturbing obsessive preoccupations.

Nocturnal fear reactions occurring during sleep are indicated by nightmares and night-terrors, both of which are a drastic indication that something is wrong and that the child's personality is in need of investigation and adjustment. The main differences between nightmares and night-terrors were described, and the possibility of night-terrors being due to carbon dioxide intoxication, epilepsy, hysteria or hypoglycæmia was discussed. It was felt that there was very little evidence that any of these conditions were of primary

importance, but cases had been seen in which administration of sugar or glucose had been immediately effective. They rarely, in any case, occur after the age of puberty.

Sleep-walking is nothing more than an enacted dream, and is distinguished from night-terrors by lack of affect and the purposiveness of the child's activities. Other disturbances include prolongation of the twilight state before going to, and after waking from, sleep, with hallucinations and delusions. This condition is most evident at puberty. Excessive sleep is also often found in very dull children with a limited range of interest. Enuresis has been associated from time to time with excessive depth of sleep, and although there are enuretics who benefit from amphetamine, this is by no means invariably the case.

18th January, 1952, at Claremont Street Hospital:

Dr. R. S. Allison presented the case of a man aged 50 who had been first seen on account of discomfort over the precordium. The usual investigations had disclosed no evidence of disease, and on closer enquiry it had become apparent that the patient was convinced that his wife (from whom he had been separated and not seen for many years) was indirectly responsible for his symptoms through the hostile occult activities of her relatives. Details of their magical power in this respect were given readily by the patient, and it was shown that he was the subject of auditory hallucinations, and that far from recognising the absurdity of his claims or fighting against them he was actively pursuing different lines of enquiry through Welfare Centres, etc., to try and shake off this persecution, though he himself was convinced it was hopeless. There was no evidence of personality disintegration and very little evidence of emotional tension.

There was general agreement that the case was one of paraphrenia, but that there was no present risk of the patient becoming actively dangerous to himself or others and no indication, therefore, for such a procedure as leucotomy. Dr. Allison expressed the view that there might be a small group of such cases on the borders of paraphrenia, to which the same attributes as those attached to certain cases of hypochondriasis might be applied, i.e., morbid interest and preoccupation without much evidence of severe anxiety or tension.

Dr. Hilton Stewart showed a patient, a woman aged 52. She complained of failing vision since May, 1951; she developed a right-sided ptosis in July, 1951; she became drowsy and developed a left-sided ptosis in November, 1951. Shortly after this she retired to bed and complained of frequent headaches. On examination she was mentally deteriorated and disinterested. Neurologically the picture was striking, with bilateral marked ptosis and incomplete third nerve palsies. The pupils, however, were not dilated. There was also bilateral partial nerve deafness. The blood Wassermann was negative, but the C.S.F. showed one white cell, protein 100 mgm. per cent, globulin +, W.R. + +, paretic Lange curve. The diagnosis was discussed at some length, and the consensus of opinion was in favour of meningo-vascular syphilis.

Mr. R. J. Luke read a paper on Cybernetics—"Mind and Matter." From experience we know that man's brain can study the brain of man. We have achieved useful results from such study, and as yet, the philosophical difficulties have had but little effect on the usefulness of the results. We picture the brain of man in terms of our machines, and try to understand the working of the mind, by applying the same forms of thought as are used in analysing the functions and mechanisms of machines. Man has very little in common with the calculating machines which have so far been produced. One of the most promising trends of current ideas is to consider the brain as a machine for handling information. This study of communication in such a general sense, in both man and machine, has been given the name cybernetics.

Examples of the similarities existing between some of the more recent forms of machinery, particularly electronic devices, and the functions of the human brain were given. It may be that by studying their similarities and their differences, we will eventually be able to answer the question "Mind or Machine?"

18th February, 1952, at Claremont Street Hospital:

Dr. Russell Brain read a paper on cerebral localization. He began by emphasising that present-day ideas on this subject were in the melting-pot. He reviewed the history of cerebral localization from pre-historic trephining to recent work on the frontal lobe syndrome, with special reference to prefrontal leucotomy.

He discussed at some length the conflicting opinions concerning the origin of the pyramidal tracts, quoting Fulton and his work on areas 4-6, and Walshe, whose hypothesis is that the cortex represents movement groups rather than individual muscles. He drew attention to what Walshe called the "leading parts," with special reference to Jacksonian epilepsy. Walshe states that experimental results should only be expressed in terms of the experiment.

Dr. Brain drew attention to the interesting findings in cases where hemispherectomy has been performed. He thought that it was best to regard motor cortex and cortical spinal tract as the final common pathway of skilled movements. He added that he frequently found a transient extensor plantar response resulting from lesions distant to areas 4-6.

In discussing sensation, he drew attention to the recent work which suggested that pain may have a cortical representation. Analgesia has been shown to occur as the result of cortical lesions when these are small. He pointed out that cortical stimulation of the human cortex gave rise to only crude movements and sensations. Speech, as such, has never been produced — only vocalisation similar to the epileptic cry! Aphasia from a localization point of view may be useful clinically, especially in the purer expressive and receptive types. This does not mean it is possible to localize the function of speech. He then briefly discussed the vexatious problem of cerebral dominance. He also stated that consciousness could be disturbed by lesions of the mid-thalamus, posterior hypothalamus and brain stem, and that this disturbance of consciousness should be distinguished from that arising from cortical lesions.

Summing up, he pointed out that, although symptoms may be useful for clinical localization, it did not necessarily follow that the function which was disturbed could be localized at the site of the lesion. This he illustrated by an analogy—that if we represented the function of speech as a cup, and if the cup were broken, as in dysphasia, the pieces may represent the disturbance of speech, but it was the cup as a whole which represented the normal function of speech.

21st March, 1952, at Claremont Street Hospital:

Dr. N. P. Moore read a paper on "Indications for treatment in psychiatry." He began by emphasising that there was no scientific basis for the physical treatments in psychiatry. As regards electric convulsive therapy (E.C.T.), there was only one clear-cut indication; that was a certain type of depression which was characterised by the following features: — (a) sudden onset, (b) early morning waking, (c) worse in the morning, improving as the day progresses, (d) self-reproach and a feeling of futility, (e) suicidal preoccupation, and (f) little or no variation from day to day. These were the features which characterised the endogenous depressions, involutional melancholia and manic-depressive psychosis. A great deal of suffering could result where E.C.T. was given wrongly.

For early schizophrenia deep insulin comas were the treatment of choice—at least sixty comas were necessary—the use of E.C.T. in early schizophrenia he strongly condemned.

Modified insulin therapy was useful in chronic anxiety states where there was marked tension, in cases of addiction during the stage of withdrawal and after E.C.T. in debilitated patients. Prefrontal leucotomy was a last resort treatment, and was particularly useful in chronic tension states, but did lead to personality changes. It gave good results in chronic schizophrenia and depression if the previous personality was good. In the obsessional neuroses if the rituals are firmly established the prognosis is not so good.

Prolonged narcosis was valuable in the treatment of reactive states, but the patient must be asleep for 5-14 days and 20 out of 24 hours of the day. It was essential to produce an emotional catharsis on the withdrawal of treatment.

Abreactive techniques were useful in the chronic anxiety hysterias:—He discussed pentothal, ether and carbon dioxide treatment. The latter was useful in patients who had a sound basic personality, and 30-40 treatments were required. He had had good results in two cases out of four of torticollis, 50 per cent of stammerers, 50 per cent of cases with phobias and in adult enuretics.

18th April, 1952, at Claremont Street Hospital:

Dr. McDonald Critchley, Dean of the National Hospital, Queen Square, read a paper on "Parietal lobe symptomatology." He began by emphasising that the symptomatology which resulted from lesions of the parietal lobe were paradoxical—they could be present in profusion or absent entirely. It also required a special technique to elicit them.

1. Symptoms which could result from lesions of either hemisphere were:—Cortical sensory syndromes (stereognosis, two point discrimination). Tactile inattention. Hemianæsthesia. Pseudothalamic syndrome. Hemiatrophy (patchy wasting of arm and leg). Visual inattention. Constructional apraxia (both hands). Unilateral visual disorientation. Pseudo-cerebellar ataxia.

2. Lesions of dominant hemisphere only:—Alexia. Apraxia (bilateral). Visual autotopognosia. Gerstmann's syndrome (1924) (Difficulty writing and counting. R. & L. unawareness. Finger agnosia. Acalculia). Pain asymboly. Anæstho-agnosia. Bilateral sensory loss.

3. Non-dominant hemisphere:—Contralateral loss of body image. Anosognosia. Loss of extra-personal space on left.

4. Bilateral lesions:—Visual disorientation. Constructional apraxia. Plano-topokinesia.

The above states were explained and examples illustrating them were given.

REVIEWS

ARCHITECTURAL PRINCIPLES IN ARTHRODESIS. By H. A. Brittain, O.B.E., M.A., M.Ch., F.R.C.S. 2nd edition. (Pp. xi + 196; figs. 257. £2. 2s.). Edinburgh: E. & S. Livingstone, 1952.

In the second edition of his well-known book, Mr. Brittain has again emphasised those principles of arthrodesis which he has practised for many years, and which the passage of time has not altered.

Ischio-femoral arthrodesis of the hip is Brittain's lasting contribution to orthopædic surgery. His preference for a blind lateral insertion of the extra-articular graft will not find general agreement among those surgeons who like to see just where a dangerous instrument — in this case the osteotome — is going. Many prefer a posterior exposure of the hip and operation under direct vision. He has demonstrated in his book, clearly and convincingly, that bone grafts placed in compression along their long axis will hypertrophy often to an enormous extent. The author still recommends the use of massive tibial grafts and, unlike many surgeons, is not unduly worried over the risks of fracture of the donor bone. Possibly the more widespread development of bone-banks will overcome this problem in the future. A new chapter in the second edition is devoted to what is colloquially called the Norwich V — a combined extra-articular graft and pinning operation in hip arthrodesis, which diminishes the period of plaster immobilisation afterwards, and thereby lessens the chances of a stiff knee developing.

The high lights of the book have to do with the hip, but arthrodesis of other joints is fully described, though there is a tendency in these to depart to some extent from the architectural principles laid down in earlier chapters.

This is an excellent book which, in its production and illustrations, even surpasses the high standards one now expects from the firm of Livingstone. R. J. W. W.

EMERGENCIES IN MEDICAL PRACTICE. Edited by C. Allan Birch. Third edition. (Pp. xi + 587; figs. 143. 32s. 6d.). Edinburgh: E. & S. Livingstone. 1952.

As the title implies, this volume is intended as a guide to the management of all those medical emergencies which any doctor is likely to encounter. No single author can adequately survey all the domains within the ever-widening frontiers of internal medicine, and Dr. Birch has accordingly invited the collaboration of twenty-one colleagues, many with an international reputation. The result can, therefore, be regarded as representative of contemporary medical thought and practice in these islands.

This book is a product of the post-war era and is refreshingly modern in outlook; instructions are terse, but in addition there is an adequate discussion of the various forms of therapy suggested, so that it is far from being a catalogue. The fact that it is dogmatic is an advantage in a work of this kind.

The number of emergencies considered is indeed formidable. This partly obtains from the liberal scope of the work, as the medical managment of many conditions in related specialities such as surgery and obstetrics is included mainly for the benefit of those in general practice. Furthermore, the contributors' evident desire for completeness has led them to include the exotic as well as the commonplace, and a glance at the index reveals such names as hæmatoporphyria, brass-founders' ague, and Ogilvie's syndrome. Emergencies arising during air and sea travel are fully treated; this is of importance, as it is in these circumstances that a second opinion is not readily available. The production is up to the usual high standard of Messrs. Livingstone. The illustrations, some in colour, are adequate, especially in the section devoted to technical procedures, but the quality of some of the line drawings might with advantage be improved in a later edition.

In short, the book can be recommended with confidence to all concerned in the care of the sick. R. J. M.

REVIEWS

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As the title implies, this volume is intended as a guide to the management of all those medical emergencies which any doctor is likely to encounter. No single author can adequately survey all the domains within the ever-widening frontiers of internal medicine, and Dr. Birch has accordingly invited the collaboration of twenty-one colleagues, many with an international reputation. The result can, therefore, be regarded as representative of contemporary medical thought and practice in these islands.

This book is a product of the post-war era and is refreshingly modern in outlook; instructions are terse, but in addition there is an adequate discussion of the various forms of therapy suggested, so that it is far from being a catalogue. The fact that it is dogmatic is an advantage in a work of this kind.

The number of emergencies considered is indeed formidable. This partly obtains from the liberal scope of the work, as the medical managment of many conditions in related specialities such as surgery and obstetrics is included mainly for the benefit of those in general practice. Furthermore, the contributors' evident desire for completeness has led them to include the exotic as well as the commonplace, and a glance at the index reveals such names as hæmatoporphyria, brass-founders' ague, and Ogilvie's syndrome. Emergencies arising during air and sea travel are fully treated; this is of importance, as it is in these circumstances that a second opinion is not readily available. The production is up to the usual high standard of Messrs. Livingstone. The illustrations, some in colour, are adequate, especially in the section devoted to technical procedures, but the quality of some of the line drawings might with advantage be improved in a later edition.

In short, the book can be recommended with confidence to all concerned in the care of the sick. R. J. M.

BIOCHEMISTRY AND HUMAN METABOLISM. By B. S. Walker, W. C. Boyd, and I. Asimov. (Pp. vii + 812; figs. 21. 68s. 6d.). London: Baillière, Tindall & Cox. 1952.

PROBABLY this book presents the contribution of modern biochemistry to some branches of medicine better than any other recent text-book. After a good discussion of the chemical structure of living matter, in which proteins are well described and carbohydrates, lipoids, and the various special constituents of different tissues adequately considered, the authors discuss aspects of the control and inter-relationship of these components. Enzymes and hormones are presented from a biochemical viewpoint, and the discussion of hormones does not overlap that usually given in physiology and medicine. Much of conventional biochemistry is described in the section on metabolism, which makes up more than one-third of the book. The authors discuss growth, but are concerned very largely with the chemistry of nucleoproteins. Some aspects of cancer and reproduction and heredity are presented and, under the heading of pathology, vitamins and their deficiencies and some aspects of infection are briefly discussed. Especially in these chapters the authors have had to introduce some explanatory details not relevant to biochemistry. They sometimes seem uncertain what they can omit, and the purely biochemical discussion of some of the subjects is often tantalisingly brief and of limited value. In general, however, while many novel aspects and subjects not usually described in biochemical text-books are included, the presentation of the traditional material of biochemistry is balanced and adequate.

The book is not easy reading and, since reference to its comprehensive and modern bibliography may be necessary to supplement the necessarily brief discussion given of some of the topics, it introduces more topics than any, but the exceptionally gifted medical student can profitably attempt to study in the time available in most British schools. The part (188 pages) dealing with "biochemical anatomy" or structural chemistry has logically enough been placed first, but this approach is somewhat less interesting than the more usual one, where the practical importance of a knowledge of biochemical structure can be progressively related to biochemical function. It is doubtful if the medical student who studies biochemistry before reading pathology and medicine will appreciate all the subjects discussed. The book is too technical for the physician who has neglected biochemistry. It will probably make most appeal to well-trained students who are prepared to maintain a good knowledge of biochemistry throughout their course, and to those who have been trained in biochemistry and who wish to bring their knowledge up to date.

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HALF a century has passed since the appearance of the first edition of Freyer's epoch-making little book — Enlargement of the Prostate. The era of the catheter life was at an end, and Freyer's operation has until recently been the accepted method of prostatectomy in the majority of hospitals throughout the British Isles.

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From the text it is clear that this is no operation for the single-handed surgeon, but rather a method for the management of prostatectomy, which demands the whole-hearted and expert co-operation of the anæsthetist, the surgical team, the nursing staff, the radiologist and the laboratory.

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The care of the patient with inoperable cancer is a recurring problem in hospital and in general practice. This report (from a Survey of 7,050 such patients from areas throughout Great Britain and Northern Ireland) gives an analysis of the medical and social problems encountered by these patients and by those nursing them at home. These difficulties are comman knowledge to most doctors in practice, and this survey is the first attempt to assess the extent of the services needed for these patients in the United Kingdom and to provide a basis for the effective use of the statutory and voluntary resources available for their relief and welfare. The special needs of the cancer victim nursed at home are discussed in the conclusions, and the special facilities which statutory and voluntary oragnisations may provide are outlined in an appendix. G. F. A.

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COWDRY'S PROBLEM OF AGEING. Edited by A. I. Lansing, Ph.D. Third edition. (Pp. xxiv + 1061; figs. 215. £5. 14s.). London: Baillière, Tindall & Cox. 1952.

THE first and second editions were published in 1939 and in 1942 and edited by Dr. E. V. Cowdry of St. Louis. The present edition is virtually a new book, and a most valuable survey of many basic biological and pathological problems of old age. The book is the work of forty-seven writers, who are responsible for forty separate chapters. Inevitably, there is some overlapping and considerable variation in the quality of the contributions. In general, the editor is to be congratulated, and, even when the literature is most extensive, authors have not presented their card indices without critical and thoughtful comment.

Those who seek practical information on the management of old age in its social and medical aspects may be disappointed by the relatively brief section on social and economic problems. They must be prepared to separate the medical information they require from the discussion of biological and pathological data in the chapters devoted to the different systems. Some of these chapters in the section concerned with clinical and organic problems of ageing are excellent, and of special interest are the accounts of recent work on arteriosclerosis presented by J. Murray Steele, and on the kidney by Jean R. Oliver. A thoughtful discussion of basic biological problems is presented in the first section of the book, especially by Dr. Cowdry and the editor. The long and somewhat academic discussion on the skeleton is concerned mainly with age changes in the normal skeleton. This serves only to emphasise the lack of any useful discussion of osteo-arthritic changes in bones and the absence of any review of the changes in joints produced by age and disease.

In his preface, the editor comments on the spirit of pessimism present in many of the chapters, and notes that research on the biology of ageing is almost at a standstill and that there is hardly a handful of workers in this field to-day. It is well to emphasise this. To-day, for many formerly doomed to early death or years of discomfort, social advances may have added years to life and given happiness to old age, but this has resulted largely from the dissemination of existing knowledge and techniques. This should not blind us to need for fundamental research if gerontology is not to live on its inherited capital. This book provides a source book for those interested in such fundamental problems.

J. E. M.

CAREERS IN MEDICINE. Edited by P. O. Williams, M.A.(Cantab.), M.B., B.Ch., M.R.C.S., L.R.C.P. (Pp. xx + 265. 15s.). London: Hodder & Stoughton. 1952.

DR. WILLIAMS has succeeded in gathering an eminent panel of contributors, and these present the prospective student or newly qualified doctor with a large number of alternative careers within the field of medicine. Leafing carelessly through the book, one might miss the eleven excellent pages devoted to general practice amid the welter of advice on how to make a career in such specialities as allergy, anæsthetics, radiology, and the various branches of surgery, in academic and teaching posts, in social medicine, in the armed services, and even in medical literature. This book is unique. It contains much good advice, the ripe wisdom of many senior and experienced men and some sound philosophy. It also contains advice on what specialist societies one should join and other trivialities which should be evident when the time is ripe. Some of the contributors rightly discuss the personal qualities required for the various specialities and the need to consider these is emphasised by Dr. Denis Brinton, the late Dean of St. Mary's Hospital Medical School, who contributes a foreword. Others give little but a few details of training and of the examinations to be passed and diplomas collected.

Many students and their parents will, doubtless, peruse this book eagerly, and they will learn much. They should, however, remember that chance plays a large part in deciding the course of a career in medicine and that failures and disappointments, which at the time may seem completely disastrous, often only open the way to a useful life in another field.

COWDRY'S PROBLEM OF AGEING. Edited by A. I. Lansing, Ph.D. Third edition. (Pp. xxiv + 1061; figs. 215. £5. 14s.). London: Baillière, Tindall & Cox. 1952.

THE first and second editions were published in 1939 and in 1942 and edited by Dr. E. V. Cowdry of St. Louis. The present edition is virtually a new book, and a most valuable survey of many basic biological and pathological problems of old age. The book is the work of forty-seven writers, who are responsible for forty separate chapters. Inevitably, there is some overlapping and considerable variation in the quality of the contributions. In general, the editor is to be congratulated, and, even when the literature is most extensive, authors have not presented their card indices without critical and thoughtful comment.

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MACKENNA'S DISEASES OF THE SKIN (Revised). By Robert M. B. MacKenna, M.A., M.D. (Camb.), F.R.C.P. (Lond.). Fifth edition. (Pp. xii + 612; figs. 215; plates 27. 42s.). London: Baillière, Tindall & Cox. 1952.

THE fifth edition of this well-known students' text-book is warmly welcomed. The book has been a firm favourite of students since the first edition, written by the present author's father, was published in 1923.

This edition contains much new material, and one notes in particular an excellent summary of "Radiotherapy in Dermatology" written by I. G. Williams, Esq., F.R.C.S., D.M.R.E., F.F.R. The chapter is a series of dogmatic statements, and as such will be appreciated by students, but since not all dermatologists would agree with some of the statements (e.g., dosage factors, etc., given) a certain tolerance is required to appreciate this summary of a difficult subject. As a dermatologist, the reviewer would certainly not agree that malignant disease of the skin should be primarily the province of the radiotherapist even when radiotherapy is used.

The reviewer would have appreciated more drastic pruning, especially of the sections on treatment. A tendency to retain all the old subject matter and add a few cryptic remarks about new methods of therapy is noted, and this is unsatisfactory for those who want "plain and dogmatic directions in regard to treatment" (authors' preface to this edition). The section in the treatment of sycosis barbæ is an example of this point. Two dozen local applications are given in two and a half pages of directions, yet only one of the newer antibiotics is mentioned, and that dismissed in a line.

Similarly in the section on the treatment of urticaria one finds detailed instructions regarding purging, bathing and dieting, but the antihistamines are discussed in a few sentences (Phenergan is not mentioned). One notes throughout the book how often such things as purging, intestinal antiseptics, dieting, septic foci and vaccine therapy are retained from previous editions.

Other small alterations which might have been made include: shortening the chapter on lupus vulgaris (twenty-two pages), lengthening the chapter on the practitioners' perennial problem of papular urticaria (less than two pages), giving more precise directions on the treatment of pemphigus vulgaris (foci of infection, intestinal antiseptics, tonics, calcium, parathyroid extract, aureomycin, cortisone and A.C.T.H. are all mentioned and dismissed in five lines), and discussing the prognostic importance of the marginal type of alopecia areata.

Well up on the credit side of this production must go the excellent photographs, which are among the best in any student's text-book. The colour photograph of lichen planus is outstandingly good. Almost all the photographs tell us something, and this collection alone is almost worth the modest cost of the book. Fig. 200—"Epithelioma of a few weeks duration in a young woman"—looks very like a molluscum sebaceum.

The book is beautifully produced, and the publishers can be proud of this production.

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In the 350 pages are packed an amazing quantity of surgical data. The book is easy to read, with a clear, concise layout, but should not be considered a text-book. It finds its usefulness in its size and its brevity. A book to be carried in the pocket for revision during idle periods, a reminder to awaken the memory.

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THE fourth edition of this already well known text-book of surgical treatment is highly recommended. It will be greatly appreciated by the senior medical student and those post-graduate students wishing to specialise in surgery. An effort to keep abreast of the ever-widening field of surgery has been made; each chapter has been carefully revised and many greatly amplified. Unlike previous editons, where operations were merely mentioned, particular attention is paid in this volume to the technical details of those operations which come within the scope of the general surgeon. These are well illustrated, and add greatly to the value of the book.

The introduction of chapters on the surgical management of congenital heart disease and arterial hypertension is timely, and can be recommended to physician and surgeon. The book is well written, well illustrated and essentially practical. E. M.

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So far as the medical bacteriologist is concerned, this varied content may well prove of assistance in dealing with the more unusual contaminants arising in cultures from time to time which may lead perhaps to confusion and unnecessary labour.

The information provided by the text is succinct and clear, and has the effect of making one wish there was more of it. The illustrations are very well done, the book is well produced and delightful to handle.

The conservative bacteriologist would hardly choose to put this book in the hands of his students since Dr. Bissett does not accept as valid many of the orthodox views held by teachers of the subject, but in the hands of the more experienced workers it should provide a stimulus to thought and further research. E. O. B.

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Nevertheless, there are many interesting and informative articles, which will help the medical profession to keep abreast of modern teaching and thought, and it is to books like this that many will turn to guide them through the volume of recent publications. D. A. D. M.

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The volume is comprehensive in its survey, with emphasis on the aspects of cause and a valuable appreciation of the role of prevention. The natural history of the disease is admirably set out, with useful instruction on the various stages of development of the pathological processes which arise in the course of tuberculous infection. The chapters on rehabilitation and B.C.G. vaccination are excellent, and the role of mass radiography in discovering the early unrecognised source of infection has its proper place.

This book is recommended to those who seek an up-to-date review of the subject, and should appeal to general practitioner and specialist alike. F. M. B. A.

THE FOOT. By Norman C. Lake, M.D., M.S., D.Sc., F.R.C.S. 4th edition. (Pp. vi + 466; figs. 166. 25s.). London: Baillière, Tindall & Cox, 1952.

THE aim of the author is to deal with the evolution, anatomy and physiology of the foot, and to present those diseases of the foot which come within the purview of the practitioner and general surgeon.

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There is much of interest in the chapters on the evolution and development of the foot, and on the influence of civilisation — indeed these are presented as ætiological factors in the production of the common foot ailments. The development of footwear throughout the ages is adequately described, and the influence of the high-heeled shoes of ladies — from their introduction in the sixteenth century by Catherine de Medici — on foot complaints well presented.

The orthopædic surgeon may be disappointed in the sections on surgical treatment, and he may well feel that the description of the use of the Thomas' wrench and the placing of operative incisions on the medial side of the great toe might usefully have been left out.

The author does not claim, however, that this is a text-book on major orthopædic surgery, and these minor objections do not in any way depreciate a work which is interesting and generally useful to the medical profession as a whole. R. J. W. W.

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THE Modern Treatment Year Book, 1952, contains forty articles, ranging from the modern treatment of hæmorrhoids to skin diseases in children. While this book is "specially designed to keep the practitioner informed on the practical application of the latest research," there is much in it outside the scope of the practitioner's work. For example, there is a good deal of detailed surgical technique, which appears to be unnecessary in a book of this kind. On the other hand, not enough is made sometimes of the practical applications of recent advances. For instance, in the article on ulcerative colitis, little is said about the management of patients with an ileostomy, or is there any guidance for the practitioner when he comes up against many of the actual difficulties. Because of these points, much more could be made of this book to keep it in line with the publishers' intention.

Nevertheless, there are many interesting and informative articles, which will help the medical profession to keep abreast of modern teaching and thought, and it is to books like this that many will turn to guide them through the volume of recent publications. D. A. D. M.

CAUSES AND PREVENTION OF TUBERCULOSIS. By Brice R. Clarke, M.D. (Pp. viii + 288; figs. 13, tables 53. 32s. 6d.). Edinburgh: E. & S. Livingstone, 1952.

TUBERCULOSIS is one of the most important diseases in medical practice. To know and understand it is almost the beginning and end of medicine. Dr. Clarke has produced a valuable monograph, which encompasses all aspects from the casual organism and diagnosis to the prevention and treatment of this scourge of the human race.

The volume is comprehensive in its survey, with emphasis on the aspects of cause and a valuable appreciation of the role of prevention. The natural history of the disease is admirably set out, with useful instruction on the various stages of development of the pathological processes which arise in the course of tuberculous infection. The chapters on rehabilitation and B.C.G. vaccination are excellent, and the role of mass radiography in discovering the early unrecognised source of infection has its proper place.

This book is recommended to those who seek an up-to-date review of the subject, and should appeal to general practitioner and specialist alike. F. M. B. A.

THE FOOT. By Norman C. Lake, M.D., M.S., D.Sc., F.R.C.S. 4th edition. (Pp. vi + 466; figs. 166. 25s.). London: Baillière, Tindall & Cox, 1952.

THE aim of the author is to deal with the evolution, anatomy and physiology of the foot, and to present those diseases of the foot which come within the purview of the practitioner and general surgeon.

The fourth edition is now in print, which in itself is sufficient indication of the popularity and usefulness of the book.

There is much of interest in the chapters on the evolution and development of the foot, and on the influence of civilisation — indeed these are presented as ætiological factors in the production of the common foot ailments. The development of footwear throughout the ages is adequately described, and the influence of the high-heeled shoes of ladies — from their introduction in the sixteenth century by Catherine de Medici — on foot complaints well presented.

The orthopædic surgeon may be disappointed in the sections on surgical treatment, and he may well feel that the description of the use of the Thomas' wrench and the placing of operative incisions on the medial side of the great toe might usefully have been left out.

The author does not claim, however, that this is a text-book on major orthopædic surgery, and these minor objections do not in any way depreciate a work which is interesting and generally useful to the medical profession as a whole. R. J. W. W.

ESSENTIALS OF SURGERY FOR DENTAL STUDENTS. By J. Cosbie Ross, F.R.C.S. Second edition. (Pp. 296; figs. 207. 27s. 6d.). Edinburgh: E. & S. Livingstone. 1952.

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In this edition new matter has been added concerning the antibiotics, and the chapter on fracture of the jaws and face bones has been enlarged and re-written.

This book should prove exceedingly popular with the dental student for many years to come.

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OLD PEOPLE IN NORTHERN IRELAND. By G. F. Adams, M.D., M.R.C.P., and E. A. Cheeseman, B.Sc., Ph.D. (90 pp. + 8 appendices). Belfast: Northern Ireland Hospitals Authority. 1952.

WITH the increase in average longevity, the problem of the aged sick is being posed more and more strongly. In Northern Ireland, though there was a realisation that such a problem existed, there were few facts upon which to base any sound conclusions. The authors of this report have carried out such a fact-finding investigation, and responsible bodies have here the necessary information to guide their deliberations and conclusions. Having given the historical background, the authors carried out a survey of old people in hospital. Hence the report is of value to Welfare Committees as well as to Hospital Boards. The problem is seen to involve a large number of people. Over 12,000 old people lead a precarious existence; almost 6,000 require some form of home help; 1,625 old people were in General hospitals; 1,716 in Mental hospitals requiring trained supervision rather than mental hospital care. Various suggestions are made to solve these difficulties—the development of a regional geriatric service, the provision of long-stay annexes at general and psychiatric hospitals, the encouragement of a home-care service, etc. Unfortunately, most of the remedies require extensive building programmes, but much could be done by Welfare Committees to ensure the success of a home-care service.

A great part of the permanent value of the report is to be found in the factual appendices. These tables represent a sound contribution to our knowledge of old age in Northern Ireland.

The authors are to be congratulated on their approach to this subject, and on their enthusiasm. One can only hope that this publication will result in early practical steps to solve the problems they have set before the community.

AIDS TO BIOLOGY. By R. G. Neill, M.A. Third edition. (Pp. viii + 288; figs. 21. 6s.). London: Baillière, Tindall & Cox. 1952.

BIOLOGY is being taught to an increasing number of students as a subject for school and occupational examinations. The author states that this book is offered to such students. It is also offered to teachers, who must teach some biology, either as a subject in itself or as part of a course in nature study, gardening or rural science, and who are commonly not themselves graduates in biology. When the author is not introducing his readers to a multitude of new terms he writes agreeably, but it is evident that the students for whom he writes must pass examinations and that examiners may expect technical details and names. This book is useful, but there is a great danger that, used alone and without access to specimens and under the guidance of teachers who have not themselves been trained in biology, it, and others like it, may blunt the student's appreciation of the very things which confer on the study of biology its unique educational benefit as a mental discipline.

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PENICILLIUM, the generic name used to describe a group of moulds, have been studied by mycologists for more than a century. At first they were regarded as the agents of decomposition and fermentation, but the discovery by Sir Alexander Fleming in 1929 that some species of the penicillia produce penicillin has stimulated renewed interest in this group.

The Manual should be regarded as a sequel to Thom's monograph of 1930. Since then many new species have been described and the association of the name of the senior author, Charles Thom, who has many, many contributions in this field since 1906, is a sufficient recommendation to its high standard as an authoritative work of reference.

It is mostly concerned with the more recent advances in the systematic study of the group based on morphology and related biochemical activity in defining groups or series, and it is interesting to note that there are now 142 accepted species of the penicillia. It contains a topical bibliography of eighty-eight pages and is, therefore, primarily a standard work of reference. In addition, it gives a concise account of the production, assay, and types of penicillium which will be of interest to medical readers. The printing and binding of the manual is excellent. It is profusely illustrated, and the coloured photographs can be described as beautiful. The authors are to be congratulated on this invaluable work of reference, which should find a place in all microbiological laboratories. N. C. G.

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SINCE the publication of the author's manual four years ago much progress has been made in the treatment of leprosy, particularly in the use of the sulphones. This supplement effectively keeps that manual up to date, and provides a good discussion of the various preparations available. It provides encouraging evidence that chemotherapy will bring new and effective weapons to those fighting this age-old scourge. The practice of keeping authoritative text-books up to date by the issue of short supplements such as this is to be commended.