EIGHTY-FIRST ANNUAL MEETING
OF THE
British Medical Association.
Held in Brighton on July 23rd, 24th, and 25th.

PROCEEDINGS OF SECTIONS.

SECTION OF NAVY, ARMY, AND AMBULANCE.

Colonel JAMES TURTON, V.D., F.R.C.S., President.

PRESIDENT'S INTRODUCTORY REMARKS.

AFTER the expression of a welcome to members of the Section and some allusions to the work to be done, Colonel J. Turton turned to the subject of the further development of the Territorial Medical Service, in regard to which he spoke as follows:

As members of the Section are well aware, the existing Medical Department of the Territorial Force leaves a large and serious gap between the field medical units on the one hand and the general hospitals on the other, and in order to provide the personnel for filling up this gap during mobilization for home defence, the War Office has delegated to the British Red Cross Society and other similar associations the duty of organizing certain units composed of individuals of both sexes—Voluntary Aid Detachments. The raising of these bodies has met with considerable success throughout Great Britain, and notably in this, the county of Sussex, as will be recognized from the following statistics:

BRITISH RED CROSS SOCIETY: SUSSEX BRANCH.
Voluntary Aid Detachments.

	Number.	Personnel.
Men's...	... 20	975
Women's	... 79	1,137
Totals	... 99	2,112

This portion of the work having been thus far accomplished, it would seem only natural to expect some effort to be made to give these organizations a more definite character and a more precise status in the scheme for home defence; but beyond arranging for an annual inspection of these detachments by an army medical officer, nothing has been done by the authorities to provide, in this respect, a stable and complete organization for the Territorial Medical Service, upon which service would doubtless devolve, in the event of a European war, the entire work of the Army Medical Service in this country.

Let us for one moment consider what the gap in the Territorial Medical Service represents. It means that in the confusion of a hasty mobilization (for modern wars are waged with little or no previous warning) the personnel and matériel of such essential medical units as clearing and stationary hospitals, medical store dépôts, convalescent dépôts, and ambulance trains, not to mention supplementary establishments, such as rest stations and auxiliary hospitals, would have to be organized and improvised, while provision would have to be made for sanitary sections and squads, and sick transport by road, river, and possibly sea.

Seeing, therefore, the immensity of the problem involved, it is evident that, in the interests of home defence, a serious attempt should be made in advance to educe out of the materials at hand a complete organization to meet the medical contingencies of a general mobilization for home defence.

It is contemplated that, on the mobilization of the Territorial Force, a Director of Clearing Hospitals should be appointed for each division of the Force. Under existing conditions the lot of such an officer during his first few weeks of office is not pleasing to contemplate, for it must be borne in mind that, putting aside the question of active military operations, from the first day of mobilization he would have to deal with a constant stream of sick and disabled men, the prompt disposal of whom would be demanded in the interests of humanity as well as of military efficiency, and he would be expected to perform this duty with an unorganized and therefore non-existent staff.

I consider that these officers should be appointed forthwith. They could then, in concert with the Red Cross authorities, arrange in advance schemes of organization for mobilization, having regard to the war stations of their respective divisions and the military topography of their divisional areas.

Similarly a Director of Ambulance Trains might be appointed for each divisional area.

Small nucleus units of clearing and stationary hospitals personnel should be formed as permanent units of the Territorial Force, in the proportion of one of each to each divisional area.

Steps should also be taken to, as far as possible, allot to the Voluntary Aid Detachments in advance their precise duties, respectively, on mobilization.

As no scheme has hitherto been published for the higher organization of the Territorial Force into Field army, line of communication troops, and garrisons, it is difficult to deal with the corresponding medical establishments, but I consider it would be a step in advance if a few of the Assistant Directors of Medical Services, Territorial Force, were promoted to Deputy Directors; they could act as organizing officers in time of peace, and serve on head quarters staffs and in other similar capacities in time of war.

It is a strange fact that, although the deficiency in numbers of Territorial officers is generally recognized and deplored (a deficiency which exists in the Medical Department as in all other branches), the authorities are continually placing on the retired list senior officers who have completed their term in command of their respective units.

These officers are mostly in the prime of life, keen and experienced, and they are retired when they are still capable of and often willing to render further service if suitable employment could be found for them, and in the Medical Department, at any rate, it is clear that useful employment could be found for such officers in the work of rendering more complete the medical organization of the home defence army.

THE WORK OF THE BRITISH RED CROSS SOCIETY'S UNITS WITH THE BULGARIANS.

By MAJOR E. T. F. BIRRELL, R.A.M.C.,
Late Commandant, British Red Cross Society's Services for Bulgaria, Balkan War, 1912-13.

ON November 3rd, 1912, the British Red Cross Society dispatched two units to Bulgaria, each consisting of three surgeons, four dressers (in place of a dresser in one unit an *x*-ray operator was included), and twelve men graded as nursing orderlies, general duty orderlies, and cooks.

The equipment was practically the field medical and hospital equipment of two tent subdivisions of a field ambulance, with certain additional surgical equipment in the case of No. 2 unit, an *x*-ray apparatus with a petrol motor and dynamo, and a supply of blankets, reserve surgical dressings, condensed milk, meat extract, chocolate, biscuit, and other articles likely to be of use for the wounded but not too bulky for transit during the long journey across Europe. As it was hoped to obtain on the spot beds, mattresses, and other articles of hospital furniture and ward equipment, bulky material was not sent out.

A large quantity of iodine (3 lb.) and the same quantity of potassium iodide, operating gowns and caps, indiarubber gloves, stovaine and the necessary apparatus, eucaine, emetine, typhoid vaccine, and insect powder were among the specially selected equipment.

Sofia was reached on November 7th, and the units came under the direction of Surgeon-General G. D. Bourke, C.B., the Director of the British Red Cross Society's Balkan Services. Orders being received to proceed to Stara Zagora with the prospect of going on to Kirk Kilisse and forming a hospital there, the two days' halt in Sofia was spent in buying what could be obtained in the way of cloth for mattresses and pillows, for sleeping suits, shirts, etc., needles, thread, soap, brushes, cleaning material, rope and string, and other articles which it might be difficult to obtain near the front.

The units entrained for Stara Zagora on November 9th, arriving there that night, one going on to Jamboli, then rail-head next day. On the way two ambulance trains were met, with wounded from Lule Burgas. One train consisted of passenger coaches with wounded lying on the seats, and covered baggage-wagons in which the men lay or sat on a little straw or matting. The other was composed of baggage-wagons only. The men were in good spirits, and seemed to make little of their discomforts and sufferings. No doubt the great majority, if not all of them, were slighter cases, but even so their fortitude was remarkable.

At Jamboli the baggage was transferred to bullock and buffalo wagons, and sent ahead with a baggage party to Kizil Agach, where the personnel followed next day in motor lorries and motor cars. Here General Bourke was recalled to meet the expedition sent out to Servia, and the units commenced their march to Kirk Kilisse, following more or less the regular convoy route. On the way several convoys of wounded were met travelling in the bullock-wagons which had taken supplies to the front. These wagons were not unsuitable for sick transport over such country, as, loosely constructed of wood, they swayed and yielded to irregularities of the ground, and, although apt to jolt, this fault was lessened by a thick layer of straw, or in special cases a litter with a mattress, on which wounded could lie in tolerable comfort. Three cases could travel sitting up, or one lying down in each vehicle.

Kirk Kilisse was reached on November 17th, and a block of what was known as the New Barracks, built by the Turks about eighteen months or two years before, was allotted to us on the 19th. It was in use as a hospital, and was full of wounded from Lule Burgas. These were evacuated, and we commenced preparing the building on the 20th, being urged to complete our arrangements as early as possible, as already wounded were pouring in from the severe fighting at Chatalja on November 16th to 18th.

The building handed over to us was one of four in the same enclosure, close to the road leading south-east out of Kirk Kilisse, and about two miles from the town. The other three blocks were occupied by the Russian Red Cross Hospital. Our block consisted of two stories with three barrack rooms in each, an attic on top which we used as a quartermaster's store, pack store, and ration store, under the able management of Captain W. Byam, R.A.M.C., who acted as quartermaster, and a wider portion at the end comprising several small rooms which we used for the operating theatre, dispensary, *x*-ray room, ward kitchen, and quarters for myself and another officer, besides affording a room for the lady interpreters who had come with us from Sofia. The attic, we found, had not been touched since the Turks left, and it afforded much that was useful in the way of barrack furniture, besides desks, entrenching tools, rifle cases, and ammunition boxes, which being tin-lined came in very handy when the wards were being equipped. The barrack rooms contained sufficient Turkish barrack bed-cots to complete our requirements in that matter, besides a certain amount of furniture—tables, stools, etc., which were of use. Everything, however, required thorough cleaning, and the first step was to carry all the bedsteads and other movables outside, and scrub them with soap and water. The mattress cases which we found were emptied and carefully overhauled. Any fit for use were boiled and hung up to dry, the others were burnt. It was found that in the recesses below the staircases much filth had been deposited; this had all to be cleared away, the walls cleaned and whitewashed, the woodwork and windows cleansed, and the floors thoroughly washed down. Even after all this, after the hospital had been in use some weeks, it was found that we had been happily ignorant of one unpleasantness. On taking down one of the barrack-room shelves in a ward then empty, for the sake of the brackets which were required elsewhere, it was discovered that the wall behind was covered with bugs, fortunately then hibernating.

The surroundings of the hospital required much "spade work." The Bulgarian is careless in matters of hygiene, and much labour had to be expended in cleaning up the ground and burying or burning the material which lay about. The presence of the foundation trenches of an unfinished building helped to facilitate matters, as in them a great quantity of old straw, mattress cases, the rubbish which was found littering up the attic floor, and much of the filth which soiled the surroundings of the hospital was buried. Burning was not always safe, as many live cartridges were found in the sweepings from the attic, which had apparently been an armourer's shop, but a rectangular incinerator, the construction of which was almost the first thing to be done, did useful work in that direction. A system of surface drainage had to be instituted, facilitated by the occurrence of heavy rain.

While these preparations were going on, sewing parties, under the direction of one of our lady interpreters, were busy in the town making up mattress cases, pillow cases, sleeping suits, etc., from the material we had brought from Sofia, and from cloth we had obtained locally. Meantime, also, the town was searched for anything we could obtain in the way of articles suitable for ward or hospital equipment, and plans were made for rationing the patients, cooking their food, and so on.

A party of reservists was allotted to us for fatigues and to help in the wards, and women were sent whenever they could be obtained to wash floors and do similar cleaning work.

One difficulty was that no part of the building could be spared for use as a kitchen. It was all too small for the number of patients we wished to accommodate. Consequently field kitchens had to be constructed outside, and in this we were fortunate in having the services of a man who had been a cook in the Royal Army Medical Corps and had also served in the Royal Engineers. He quickly constructed with bricks and a section of trolley line a fireplace to take the large cauldrons used for the patients' food, and placed at one end a length of stove pipe, which earned for the structure the name of "The Rocket." At a later date a nearly completed building close at hand was roofed over for us, and in this a large kitchen and quarters for the officers and men were arranged.

Another difficulty, and one which was always with us, was water. None had been laid on to the barracks, and the supply had to be carried in barrels on bullock carts from a spring about two miles distant. This meant that the barrels had to be filled by hand and the water run into tanks outside the hospital, and into these tanks any one could dip any promiscuous utensil. Thorough supervision was impracticable, and to have attempted to boil the water was considered a snare and a delusion. After much delay a raised tank with a pump was constructed, but as soon as it was installed hard frost set in and put the apparatus out of action. To counteract the risk of bad water—and even at its source it was not above suspicion—the personnel were provided with tea at each meal, and in the wards tablets of sodium bisulphate, two to each water jar containing about two quarts, were used, probably too weak a solution, but no ill effects were ever traced to the drinking water.

Conservancy required much supervision. Commodes, after much delay, were placed in the stairway landings, where also kerosene tins did duty as night urine tubs. Outside, near the trench latrines, disposal pits were dug, with a supply of water in an empty rifle box with which to wash the bed-pans, and a cauldron in which all pans and urinals were boiled daily. This was carried out under the supervision of a trustworthy non-commissioned officer who had charge of all sanitary duties. After a few weeks a latrine on the removal system was installed.

Kitchen sullage from the field kitchens first in use was emptied into a pit through a grease trap consisting of a straw-filled box with holes in the bottom. When the inside kitchen was ready, sullage was run out through a pipe in the wall to a kerosene oil tin filled with straw, standing on legs, and emptying over a drain leading to a series of three deep trenches used on consecutive days. This system worked well so long as it was seen that a trench was used for no more than one day, and that, after the sullage had soaked away, the soil at the bottom was loosened before the trench was used again. Dry kitchen refuse was burnt on the fire or in the destructor.

With the surgical equipment brought out it was possible to equip the operating theatre fairly completely. Linoleum was bought for the floor. A glass-fronted bookcase did duty as an instrument cupboard; zinc was forthcoming for covering a table or two; we had a folding operating table, and with a few pots of white enamel for the tables,

woodwork, etc., the semblance of a modern operating theatre, under the management of Major C. Hudson, D.S.O., I.M.S., was not far amiss.

There was, however, no sink and no water supply. Everything had to be carried out by hand, and cleaning up after an operation was a lengthy business, involving great labour on the part of Major Hudson and his assistants, whose efforts, however, were rewarded by the good surgical results their scrupulous care made possible.

A small shed was built for the motor used to charge the accumulators of the *x*-ray apparatus, and the equipment itself was placed in a small room of which the window was boarded up and further darkened by blankets. For the charge of this department we were fortunate in having the expert services of Mr. H. W. Cox, and his apparatus did work which was much appreciated not only by us but by our friends of the Russian hospital, the Women's Convoy Corps, and the Bulgarian hospitals in the garrison, who sent their patients for examination.

The first convoy was received on the morning of November 26th, all wounded from Chatalja, and many of them extremely serious cases. By arrangement with the local sanitary inspection we were sent a large proportion of severe surgical cases for operation, and on this account the numbers which passed through our hands were much smaller than even the limited accommodation at our disposal could have dealt with.

On the morning when the first convoy arrived no bullocks were forthcoming to bring water, and we could get none until 1 o'clock, except from a very doubtful and inadequate well in the enclosure. This of course delayed matters, and things were not improved by the shortage of rations, which were not received until the evening, at which time the extra supply asked for in anticipation of the convoy's arrival was delivered.

All the wounded which we admitted (161) had received their injuries a week to a fortnight previously, and all, except, I believe, one man whose wound had healed by first intention, were septic. While the majority were due to small-arm bullets, there were many shrapnel wounds and one from a hand grenade.

Of the effects of the Turkish sharp-pointed bullet it is perhaps hardly safe to dogmatize at present. Few foreign observers had opportunity of seeing its wounding powers as shown on the battle-field. Their experiences were mostly limited to cases able to travel down the line of communication. It may be that the tendency of sharp-pointed bullets, which have the centre of gravity near the base, to turn on encountering even a slight resistance and so inflict a severe wound, even on traversing soft tissues, may have resulted in many deaths on the field from haemorrhage or severe internal damage. At present the evidence is not conclusive. What practically all have affirmed—and our observations correspond—is that in the wounded sent down the lines of communication the results of the sharp-pointed bullet were practically the same as those of the better-known ogival-tipped missile. In many of our cases the bullets had lodged, and neither examination under *x* rays, nor the subsequent operation for removal, served to confirm the anticipations that the bullet is apt to turn over or be deflected. No such changes were found, and the only deformed bullet extracted had been a ricochet. The Bulgarians frequently remarked that the Turkish bullet was a humane one, and surprise was expressed at the few men killed in comparison to the number of wounded; but these were only the impressions of officers who had seen necessarily limited portions of the campaign.

One condition exhibited by the wounded and which was particularly striking was the craving for sweet things. In some men it almost amounted to an obsesssion; they continually asked one for more sugar, and offered even to buy it from us (as if that had been possible), and the Bulgarian word for sugar ("zachar") constantly recurred in their conversation. In a man shot through the face, whose wounds were suppurating very freely, and who was much reduced by illness and the difficulty of feeding himself, the condition was specially evident. We ourselves suffered from the same want.

In the war-scale daily ration for the Bulgarian army, 2 lb. 10 oz. of bread, 14 oz. of mutton or beef, 3½ oz. of beans, dried or fresh vegetables, 7 oz. of potatoes, and $\frac{7}{16}$ oz. sugar form the principal ingredients, besides an allowance of salt, lard (1¾ oz.), red pepper, tea or coffee, and 7 oz. of cheese or salt fish as substitutes for meat. This ration contains far more bread and less meat than ours, and is deficient in sugar. In the British army 2 oz. of the latter, 1¼ lb. of bread and 1¼ lb. of fresh meat are allowed in the normal ration on active service, and we found the bread in the Bulgarian ration far too much, the meat not enough. Fats also were deficient (the allowance of lard was not, I believe, available). It was only occasionally possible to purchase extra meat, and sugar in excess of the ration was only obtainable towards Christmas. For the troops at the front, supplies had no doubt been scanty, and for ourselves on the march down and even in Kirk Kilisse during November and early December rations were frequently short, and the physical work fairly severe. The "sugar-hunger" felt by the patients and, in lesser degree, by the personnel was merely the physiological expression of their needs, accentuated in the case of the wounded by the tissue-wastage of suppuration. Some of us showed "starvation-lines" upon the finger nails, corresponding apparently in time to the period of hard work and "short commons" during the march down to Kirk Kilisse.

Of medical cases only 64 were admitted. These were mostly the result of cold and exposure, such as bronchitis, bronchopneumonia, frost-bite (1 case), and a few cases of oedema of the legs and feet, the origin of which was obscure, but was attributed by the men themselves to exposure in the trenches. The condition cleared up after a few days' rest in bed. Dr. C. Clarke treated many cases of enteric fever in a neighbouring hospital with typhoid vaccine. His results—which I believe will be published—cannot fail to be instructive, and while I feel I must leave him to speak for himself, I think I may say that, clinically, the impression one gained was that under vaccine treatment the disease pursued its normal course, but that excess of toxin was counteracted, as shown by the disappearance of toxic symptoms and the freedom from complications.

There are one or two points in the reception and despatch of convoys which were found to be of practical importance. One was the desirability of being able to provide each man with hospital clothing on arrival, so that his underclothes, soiled as they often were with blood and even pus, might be boiled and washed and his uniform at least fumigated to rid it of vermin. This was necessary not only for cleanliness and comfort, but in view of the risk of typhus exanthemata, a few cases of which did occur in a neighbouring hospital.

In the earlier weeks our supplies of clothing were insufficient except for cases confined to bed. For others, washing and fumigation was done piecemeal, and with the help of insect powder and small-tooth combs—which the Bulgarians themselves carried—pediculi were at least kept within bounds. Fumigation was carried out in the pack store, the clothing being hung up on lines and sprinkled with water and then exposed to the fumes of sulphur burnt over water.

It was necessary to be careful not to destroy any clothing that could be worn again. So soiled and torn were many of the undergarments and articles of uniform that medical officers were often tempted to have them burnt as of no more use. We could to a certain extent provide men with underclothing from the Red Cross stores sent out to us, but fresh uniforms could not at first be obtained, and one or two men had to be sent towards the base without nether garments. Fortunately the Bulgarian soldiers' great-coats are long and their boots or leg-bandages are high, concealing outward deficiencies, and we were able to provide warm substitutes for the missing articles.

The hospital remained in our hands until January 15th, when, on recall to England, we handed it over, with the remaining patients, to the Bulgarian authorities, who caused it to be taken over by the personnel of one of the line of communication hospitals, assisted by three English lady doctors who had come out with the Women's Convoy Corps and remained behind on the departure of the rest of their party.

The British Red Cross Society's units returned to Sofia on January 19th, where they met with a very kind reception, and reached London on the 25th of the month, after exactly twelve weeks abroad.

THE RELATION OF AND UTILITY OF AEROPLANES IN CONNEXION WITH MEDICAL SERVICES IN THE FIELD.

By Lieutenant-Colonel J. D. F. DONEGAN, R.A.M.C.

I APPEAR before you to-day for the purpose of discussing the possibilities of the uses of aërial appliances to the medical services in the field. Dr. Reymond, the celebrated French aviator, has alluded to the hygiene and physiology of airmen before the Military and Naval Section at the Congress in Paris, and no doubt many of you have read his most interesting and instructive lecture.* I sadly lack the experience of Dr. Reymond on this most interesting subject, and I will therefore limit my remarks to the practical aspect.

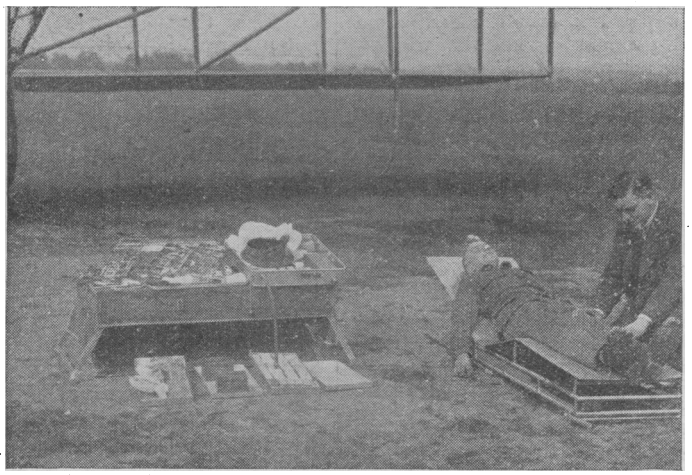


Fig. 1.—Table on low level for the purpose of reduction of dislocation, or when required for use in shellproof trenches with limited head room. Showing the aerial cradle in use as a side table for holding instruments.

As you are no doubt aware, our aërial fleet consists of the old balloon, man-lifting kites, airships, monoplanes, hydroplanes, biplanes, and hydro-biplanes.

Balloons cannot be of much use to the medical service, except that possibly small balloons lit with dry-cell batteries might be used for designating the locality of hospitals at night time in towns and on lines of communication, as at present our distinctive mark is not sufficient to make their whereabouts clear to airships dropping explosives.

As regards airships, I have no doubt that within a very few years they will be used for the removal of wounded on account of the rapidity with which they can work; at present, owing to difficulty in landing and rising, they could not be so utilized, but I feel confident that before many years have passed those of us who are alive will see airships replacing our present ambulance trains for sitting-up cases, if not for the more serious ones.

Monoplanes, as you know, are not regarded favourably in our army at present, but when perfected they can be used similarly to biplanes for medical purposes. Hydro-planes are not likely to be of use to a land force.

Biplanes.—The evolution of the biplane type of aeroplane owes its origin to the ingenuity of an Englishman, named Francis Herbert Wenham, who as far back as the year 1866 made a machine which lifted well, but failed for want of structural strength.

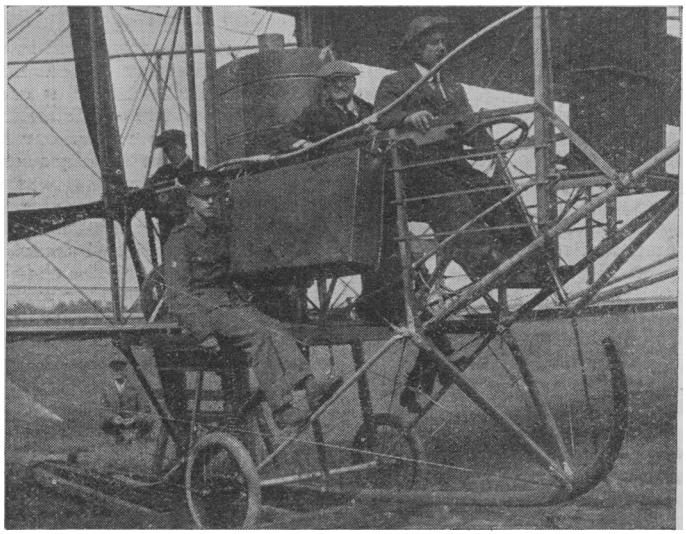


Fig. 2.—Table closed up, measuring 22 in. by 42 in., and fixed on plane. It can also be carried by motor car, motor bike, taxi, or in wagon, cart or on horseback. Weight, containing 46 lb. of surgical equipment taken from present field panniers, is roughly 93 lb., which can be reduced to 80 lb. if so desired.

The hydro-biplane, Colonel Cody's newest invention, is the machine in which my ambulance experiments have been made. This machine is the largest thing of its sort yet made; driven by a 100-h.p. engine it has a speed of over seventy miles an hour, which is quite fast enough for ambulance purposes. By adjustment it can start or land on either ground or water, and it can carry with the greatest of ease the operating table with all surgical contents, three medical officers, and if it were necessary to do so it could, I should say, carry two wounded men; but that experiment as yet has not been tried. Smaller aeroplanes and monoplanes could be utilized for the transport of the table and one expert.

One of the most difficult problems for an A.D.M.S. in the field is how best to utilize the services of his officers. According to regulations these officers are detailed for duty with medical and combatant units, but it must be remembered that squadrons of mounted troops get detached for scouting duties, and it is impossible for the one medical officer authorized for the regiment to be subdivided. In the event of a full regiment of cavalry having a serious casualty list when perhaps thirty or forty miles away from the main army, the surgical treatment of the wounded becomes too big a matter for a solitary medical officer; beyond rendering primary aid he can do no more. By utilizing the biplane additional medical assistance can always be provided. No guards or escorts are required, and in calculating distance and time a mile per minute can be taken as a standard. From this it can be realized that the services of surgical specialists can be obtained not only from the field medical units, but also from clearing and stationary hospitals miles away.

In staff rides and war games we notify the A.D.M.S. that we are leaving thirty patients whose injuries are so serious as to render their removal inadvisable. It is quite possible that there may be no medical man within miles, and it is more than probable that an ordinary provincial practitioner might not relish the idea of doing twenty major operations on patients scattered about the country in different farmhouses. Under the Geneva Convention we can rely on the civil inhabitants to look after the creature comforts of the wounded and on the nearest medical practitioner to attend to ordinary cases. With aërial transport we can do our own serious operations. I was asked by a gentleman if medical officers could be ordered to fly, as he did not think so; thirty years ago he could have said that an officer could not be ordered to ride a bicycle; fifteen years ago he could have said that he could not be ordered to go in a motor. Aërial transport has now progressed from infancy to the advanced puberty stage, and is but a small degree removed from adolescence or perfection. As regards risk, why war is all risk, and the medical officers are not asked to drive or start the biplane, but simply to share the danger of the pilot, and go as passengers. I feel perfectly sure that in real warfare no officer of the corps—or, for the matter of that, no member of our noble profession—would question the mode of transport should his goal be professional assistance to disabled comrades.

* His lecture was very kindly sent to me by Surgeon-General W. W. Kenny, K.H.S., who takes great interest in this subject.

I do not propose to monopolize biplanes for medical purposes; I regard them in the same way as heliographs in the field are used to convey any message—that is, to be of any assistance they can. Those are, I can assure you, the views of flying men; and they would consider it no indignity to pilot a medical officer going to the assistance of a wounded and helpless man.

There are many who consider that the aërial service will be otherwise engaged, and not available for the purpose I have mentioned; but, in my humble opinion, in actual war the medical service can get any single thing it wants.

I now produce for your inspection the operating table devised for aërial transport. It is my own invention, and has been made by Messrs. Arnold and Sons, Giltspur Street, London, who hold the patent rights. As you will see, the table is without legs, but as legs may be desirable in the event of my idea of concentrating surgical requirements appealing to civilian operators or to medical officers of the Royal Navy, I produce the rough wooden model of a form of support which has occurred to me.

As you will notice, it consists of two combined triangles, and has therefore great supporting strength, also that it closes up into a small space. Nothing in the form of a portable leg of half-inch or even inch diameter will give the required support for an operating table on sandy soil, rocky ground, or on any steep gradient. Still, as far as I can judge, for military purposes in the field legs are not required, as a field ambulance can never be without its panniers and reserve dressing cases, and they form an excellent support. In any form of stationary hospital in a civilized country, the ordinary barrack trestle table should be available, and its strong heavy legs are quite suitable for the aero-operating table. Bedside tables will also do. When the table is separated from a medical unit, as, for instance, when it has been flown to the assistance of detached troops, ammunition boxes, tins of compressed beef, or hay, sacks of oats, and rifles can be improvised into supports. Even in a barn there would be in some neighbouring house boxes, water barrels, small tables, trunks or blocks of wood, and they would answer the purpose. Even, for example's sake, say that there is nothing whatever available in the shape of a support, a certain amount of elevation is provided in the table itself, so as to allow an operator to work kneeling on one knee. That I have done myself in what was popularly known as a "funk-hole" in Ladysmith, and I see no reason why the contingency should not arise again in war.

The next point to which I refer is the concentration of equipment. As you know, at present in a field ambulance the necessary requirements are packed away in different boxes. The very packing of these boxes in the Army Medical Stores requires the services of an expert. So you can imagine the difficulty of returning the articles to their respective compartments after use in the field. This table carries 46 lb. of equipment, and sets free space occupied in our panniers which in the first instance could be packed up with bandages and expendable dressing material, so that every time things were taken out it would be easier to put them back. The following are the articles carried in table:

Apparatus, saline infusion	No. 1
Bandages, loose woven	No. 12
Calico, thin	4 yds.
Containers, vulcanite (50 corrosive sublimate tabs)	No. 1
Drainage tubing	1 tube
Instruments, operation (or surgeon's roll)	1 set
Inhaler, Skinner's	No. 1
Pins, safety	2 boxes
Sterilizer, 1905 pattern	No. 1
" " " spirit container for	No. 2
Silk skeins, plaited	1 tin
Tin of soda	No. 1
Tin of sodium chloride	No. 1
Tubes, iodine powder	No. 20
*Stovaine syringe	No. 1
*Solution for cases	No. 1
*Gloves, rubber	6 pairs
*Surgical gauntlets	2 pairs
Towels, aseptic	6
Case, hypo., '98 pattern	No. 1
Cartons of chloroform tubes (6 oz.)	No. 3
Drop bottle for chloroform (in leather covered case; 2 oz. chlor.)	No. 2
Forceps, tongue	No. 1
Tube, ethyl chloride	1 tube
Stopcock for ethyl chloride tube	No. 1
Bandages, triangular	No. 6
Gauze, D.C. compressed, 2½ yd. packets	27½ yds.
Wool, D.C. compressed, 2 oz. packets	1 lb.
Wool, C.A. compressed, 2 oz. packets	½ lb.
Sponges, abdominal	No. 6
Spirit lighter	No. 1
Tape, measuring (spring)	No. 1
Stethoscope, aluminium	No. 1
Nail brushes	No. 4
Soap cakes	No. 4
Field tourniquets	No. 4
Cloth, waterproof	2 yds.

* Not provided in present equipment.

There is no necessity for rigid adherence to this list; the operator can take whatever he so desires and leave out what he does not require.

As you are no doubt aware, at present to do an operation on the line of march, if such a contingency were necessary, would practically mean opening five cases—operating table, 1 and 2 surgical, and 1 and 2 medical panniers—whereas, on the other hand, the "aero-table" contains everything necessary. Again, the present pattern field sterilizer will not hold a large operating knife, whereas with the "aero-table" there are six dressing trays, two measuring 22 × 17½ in., and four measuring 16 × 9 in. For abdominal operations in cold climates this table can be heated by a very simple means. Head elevation and extremity elevation are also provided for. Further, the table can be foreshortened for rectal operations. There are no compartments for packing; things can be put in wherever they will fit.

Our present field operating table is opened by a railway-key. Without the key the case must be broken before the table can be got at, and after being broken open the case cannot be properly closed. In this table three alternatives are provided for: (1) Lock up in the usual fashion; (2) lock up and leave key in the little secret drawer provided for it; (3) give up locking up and keep both keys and lock in the drawer referred to until required. The aero-table can also be used as a stretcher on which the patient can be carried to his bed or other resting place after his operation is finished.

I hope you will not look on me as a captious critic. I have suggested that the system which I have described is an improvement on our present one, but I am fully alive to the fact that before to-morrow morning dawns one of you may have devised an infinitely superior one.

A brother officer asked me some while ago if I proposed to have aeroplanes full of medical experts flying over the heads of charging cavalry ready to swoop down and tie arteries and do abdominal resections on the spot. He also wanted to know from statistics the number of surgical operations done in the field. There was a lot in his argument, as I certainly do not approve of operating in the field. He eventually agreed with me that if surgical appliances were carried in the field they would not be injured by being concentrated in one package instead of being packed in several, and he also realized that it was possible that the man left unfit to be moved might require some surgical aid, if not the next day, at least the day after, and that with aërial transport it would be possible to afford this assistance.

SPINAL ANALGESIA IN MILITARY SERVICE;

WITH A NOTE ON 600 CASES.

By MAJOR J. W. HAUGHTON, R.A.M.C.

SPINAL analgesia as now practised was introduced into this country some six years ago, when Mr. Barker published a monograph on the subject in the BRITISH MEDICAL JOURNAL of March 23rd, 1907. The suitability of this method in military surgery was immediately recognized by Major Spencer, R.A.M.C., and a report on our first 50 cases operated on in the Queen Alexandra Military Hospital, Millbank, was published in the *Journal of the Royal Army Medical Corps* of November, 1907.

The accumulated experience of the past six years has convinced me of the advantages of this method, and I propose to summarize here the results of my last 600 cases

operated upon in the Military Hospital, Aldershot, during the past three years, in which spinal analgesia was the routine anaesthetic for all operations on regions below the level of the sixth dorsal segment of the spinal cord.

Summary of Operations.

Herniotomy	156	
Appendicitis (acute)	63	
Appendicectomy (à froid)	60	
Gastro-enterostomy	2	
Enterectomy	1	
Intestinal anastomosis	2	
Other laparotomies	10	
Operations on kidney	1	
Resection of ribs	1	
Total abdominal		296
Piles and fistulas	82	
Pubis and genitalia	95	
Reduction of dislocated hip	1	
Amputations (leg, thigh, and foot)... ...	3	
Wiring fractured patellae	5	
Removal semilunar cartilage of knee ...	36	
Other operations on lower limbs, wiring or plating fractures...	82	
Total non-abdominal		304
Total abdominal and non-abdominal operations...		600

There are a few points in this table which call for remark. There was in this series no case of failure to enter the dural sac. There was no case where injection was not followed by adequate analgesia. There was no case which gave cause for any anxiety as to the safety of the method. There were six cases where analgesia did not last to the end of the operation. These were lengthy procedures, in which the operation was completed under chloroform inhalation.

As regards the after-effects of injection in this series, they were fairly uniform—26 per cent. of the patients experienced slight faintness or nausea within fifteen minutes after the injection. This condition passed away quickly, and the patients became drowsy and comfortable; on returning to the ward 6 per cent. vomited. Among these are included cases where vomiting was present before operation. Headache was reported in 28 per cent. of the cases; it was usually mild, and seldom interfered with the patient's sleep. In 40 per cent. of the cases injected there was no discomfort of any kind, either during or after the operation, and in the words of the theatre attendant "they did not turn a hair."

That spinal analgesia as a routine procedure is preferable to inhalation anaesthesia in military surgery is now realized by those who have studied both methods, while its great value to the surgeon on active service or abroad has been widely appreciated. I have used it in West Africa, and found the black man as amenable as the white.

In the recent Balkan war it was used in the British Red Cross Hospitals sent to Turkey and to Greece.

Time does not permit me to discuss the technique of spinal analgesia, but a full description of the method will be found in (1) *A System of Operative Surgery*, vol. i, edited by Mr. Burghard; (2) in Keen's *Surgery*, vol. vi; and (3) in the *Royal Army Medical Corps Journal* of December, 1912.

The advantages of this method to both patients and surgeon are numerous and obvious. Amongst them may be mentioned the patient's (1) increased safety and freedom from the toxaemia of a general anaesthetic; (2) the total abolition of operative shock; (3) the retention of consciousness. To the surgeon: (1) The relaxation of muscular tissue is complete. This degree of relaxation is unattainable by other methods of anaesthesia, and is a great help to rapid operation. (2) The services of an anaesthetist are not required. Operations can be carried out single-handed if necessary. (3) The technique and apparatus are simple, portable, and inexpensive.

As in the administration of any other anaesthetic, the best results can only be obtained by careful study and an intelligent technique. They are part;cularly applicable to the use of spinal analgesia, which demands, in addition, a high level of surgical cleanliness and attention to detail,

THE USE OF KINESITHERAPY IN THE AFTER-TREATMENT OF INJURIES RECEIVED IN WAR.

By Major Durey,
French Territorial Army.

There is very little literature on this subject, for until European armies began to use small-bore bullets the mechanical after-treatment of wounds was only rarely required, as formerly the destruction of the soft parts, the injuries to the bones, the almost certain infection of the wound generally necessitated amputation. Now that different armies use bullets of 6 to 8 mm. calibre and antiseptic methods are generally employed amputation is only rarely performed.

The surgeon does not only aim at preserving the limb; he tries to restore to the parts affected all their functions and to avoid the establishment of permanent disability; hence the necessity of kinesitherapy—that is, treatment by massage and passive motion.

But the methodical use of this treatment is itself of recent origin and in France at least it was not used before the year 1880.

Since then there have been no wars in Europe to provide us with material.

At the present time we have to deal with two distinct classes of wounds—namely, those caused by infantry bullets and those due to artillery projectiles.

If we take the recent Balkan war, according to the report of the French military surgeon Cousergues, shrapnel bullets cause large wounds often containing fragments of clothing and very liable to suppuration.

As regards wounds produced by explosive shells, their characteristics, according to the French surgeon Delorme, are that they are more or less extensive, with much bleeding, and complicated by lodgement of fragments of the missile.

These two kind of wounds form only one-tenth of the total number. The great majority of injuries amenable to kinesitherapy are produced by rifle bullets.

The military surgeon Cousergues reports, according to his personal experience in the Balkan war, "the rifle bullets make very small wounds comparable to those made by a trocar. Owing to their great penetrating power they generally produce an entrance and an exit wound not always easy to distinguish."

On the other hand, Professor Delorme, speaking of the German "S" bullet used by the Turks, says: "The perforations in the epiphyses are cleaner cut than the perforations of the diaphyses of the long bones, fractures are less comminuted, and in general the mass of loose splinters is less extensive and the fissures narrower."

The experimental test of this opinion is advanced by Professor Kalliontzis (from Athens) in his report to the French surgical society: "The penetrating wounds of the joints, mostly those of the knee, healed generally without complications, leaving a very useful joint. Complicated fractures of the long bones by rifle bullets were frequent; they healed as easily as subcutaneous fractures, while those caused by shrapnel were serious and difficult to cure. The conservative methods have been strictly applied in the treatment of complicated fractures and have given me the best results. I succeeded in curing my patients without performing any amputations in 62 cases of serious complicated fractures."

From these very recent experiences it appears that the number of cases of injuries of the bones of the limbs amenable to conservative treatment will increase in the years to come. In these cases after the cure of the wound the surgeon must consider the necessity of restoring to the limb its normal function.

It is in these cases that kinesitherapy is called for. In similar cases met with in time of peace the rule is to practise massage or passive motion as soon as possible, according to the nature of the injury and the skill of the surgeon. In time of war it will be impossible to apply the same rule. The patient must first be transported to a medical unit at the base. The wound must be given time to heal.

When mechanical treatment is begun the first application must be made by the surgeon, or at least by an experienced trained attendant. It is not advisable to trust an ordinary

assistant to apply early passive motion to a recently wounded joint not long healed or to a limb in which the fractured bones have not become solidly united.

According to the great majority of authors, the treatment of wounds in war, implicating the bones or the joints, will require the use of massage and passive motion. But this treatment is long, requires great care and experience. Is the medical staff of European armies prepared to carry it out?

In the case of a Continental war France will put at least 1,200,000 into the field. Taking as basis the figures given by Hermann Fischer for the Russo-Japanese war, these forces would have about 160,000 to 180,000 wounded, of which 100,000 would be wounded in the limbs. Three-quarters of these, at least, will require some form of manual or mechanical treatment.

It has often been said that war is "an epidemic of traumatism." I believe that, although the medical services of armies have done all in their power to contend with this epidemic, yet they have neglected its sequelae.

With us, Dr. Hirtz, attached to the Military Hospital of the Dey, in Algiers, has had occasion to test the usefulness of kinesitherapy on the wounded coming from Morocco. During the year 1912 he had to treat 62 wounded, of which half have been cured, one quarter much improved, and another quarter has derived no benefit. From these results Dr. Hirtz concludes: "Without the help of physiotherapy the number of permanent invalids would have been much greater and likewise the pensions to be paid by the State."

It must be taken into consideration that this small number of patients required almost four thousand individual sittings; one may judge from this the amount of work which will have to be undertaken by the medical service, especially if one bears in mind that a skilled masseur cannot treat more than 12 to 15 patients in twenty-four hours.

From the relation of this figure to the probable number of wounded which I have previously mentioned as likely to require the kinesitherapic treatment, it is easy to conclude that a specialized staff and equipment will be wanted.

I know that in all countries the effort made by the military medical service will be augmented by private societies for affording help to the wounded and that in most of these societies some ideas of massage are imparted to the nurses, but hazy ideas are insufficient for the successful application of treatment, often delicate and requiring not only correct manual technique, but also medical knowledge.

It is to be desired that in time of peace the military medical services should create special departments of kinesitherapy, where a certain number of army surgeons, as well as a good many assistants, would be trained to carry out this form of treatment; also that the hospitals should be equipped with a mechano-therapy apparatus.

The evolution in the nature of the missiles must bring an evolution in the surgery of war; it is the surgeon's part to adapt himself to it. More frequently than formerly he will be able to attempt to restore to the wounded a useful limb. Amputation will be seldom performed, and more use will be made of kinesitherapy. In wars to come a great number of surgeons will be required in the medical services at the base, and these should be skilled in the use of massage, passive motion, and mechano-therapy.

A PROPOSED LIGHT AMBULANCE FOR YEOMANRY REGIMENTS.

By D. G. Kennard,
Lieutenant R.A.M.C (T.F.).

A number of yeomanry regiments have an ambulance of one sort or another; this paper endeavours to show the advantages of a light ambulance wagon suitable to any country, whether over roads or in open country. This wagon is, of course, quite distinct from the cart provided by the regimental transport officer on mobilization for the transport of 5 cwt. of medical equipment and stores, and it is also quite distinct from a light ambulance wagon that might be provided by the ambulance column, and attached to a regiment on special service. The light ambulance wagon that I am going to describe is to be the property of the regiment and to be a part of the regiment.

The regimental band are the official stretcher-bearers in yeomanry regiments. Neither the band nor the stretchers appear on parade, field days, or during manœuvres or schemes at annual training. Should the regiment drill

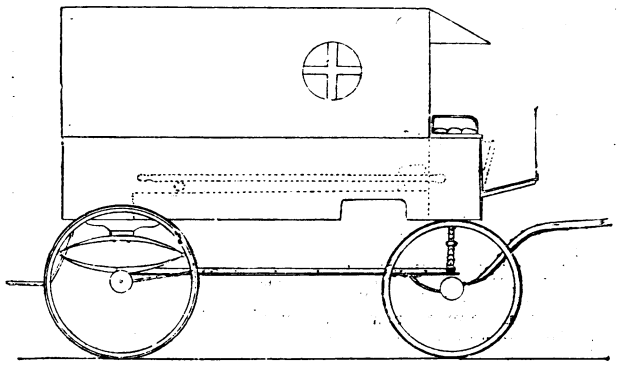


Fig. 1.—Model I. Full lock (side view). Raised body to allow wheels when turning to lock under carriage. Price complete £50.

perform exercises or schemes some way from camp, what is to become of the soldier who meets with an accident during these manœuvres? A cart of some sort has to be commandeered from somewhere for his conveyance back to camp.

More or less serious accidents on parade occur almost daily during camp, and some available means of transport is essential. The light ambulance would accompany the regiment on parade, and its position would be made known to all squadron leaders so that it could be found at once when required. The ambulance is so light that it can keep pace with the regiment, and can go anywhere the regiment can go. It is capable of going over any country, any bad track, and in fact anywhere that horse artillery can go.

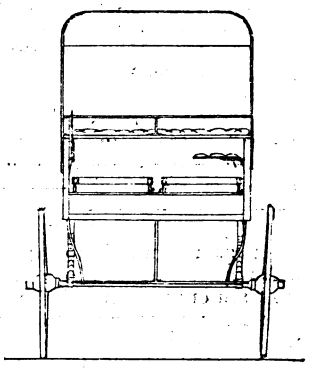


Fig. 2—View of Model I from back.

It is constructed after the pattern of the four-wheeled American buggy. The body is longer and wider, and capable of holding two stretchers side by side. There are two models. Model I has four wheels. The two front wheels are a little smaller than the hind wheels, giving it a full lock. The front wheels turn under body, which has been raised to allow of this, and the wagon can turn on its

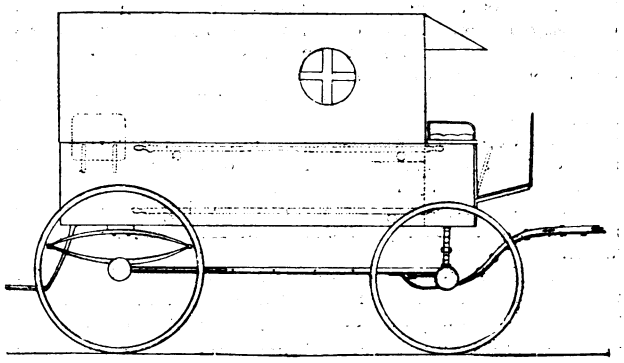


Fig. 3.—Model II. Side view.

own wheel base. Model II has wheels of the same size, a low body and a quarter lock. The wheels are made of hickory, and are very strong. It has three springs—two back and one front. It is well sprung, strong, and comfortable. It has two seats at the back, which fold up on to the side of the wagon, for two bearers, and a front seat for the driver and another bearer if necessary. It is fitted with

a hood and shafts for one horse. The total weight, with stretchers, is about 5 cwt. The stretchers run in on rails like the ordinary light ambulance wagon, and are secured in position with straps.

A cob of 14 hands can draw it anywhere, and it is almost impossible to turn it over. Any one can drive it and there is nothing to get out of order, and it takes a very short time to clean.

I used one of these wagons for several years, before the days of motors, in ordinary country practice in a district where the country was open with a lot of down land. It will stand any amount of hard work. I could go anywhere with it. I have driven horses from 16 hands to 13 hands in it, and never had any trouble or breakages with it. The ordinary light ambulance wagon in reality is very heavy, and it has to keep to roads or good tracks, has two horses, and must necessarily travel slowly.

The advantages I claim for this light ambulance wagon are:

1. That it is really light.
2. One horse can draw it.
3. It can keep pace with the regiment.
4. It is very strong, well sprung, and comfortable.
5. It can go anywhere.
6. That it adds strength to the regiment, in that in case of accident the wagon and bearers are on the spot. The injured soldier is at once attended to and the other members of his troop who are with him are relieved of the soldier and of holding the horses of those attending him.

All yeomanry regiments should have their own ambulance, and, after seeing many different patterns, I am convinced that the wagon I have described to you represents the best ambulance for this particular branch of the service, and I trust before long it will be adopted by yeomanry regiments.

SECTION OF DERMATOLOGY.

J. H. SEQUEIRA, M.D., F.R.C.P., President.

PRESIDENT'S INTRODUCTORY ADDRESS.

AFTER some initial observations, the PRESIDENT said: Before proceeding to the actual business of the day, I know that I am only voicing the feelings which animate us all when I say how very greatly we in this Section deplore the loss which the profession in this country has sustained by the death of Sir Jonathan Hutchinson. I joined the London Hospital too late to see any of his work in the wards, but I frequently had the privilege of hearing him lecture as Emeritus Professor of Surgery at that institution and elsewhere. I am sure that all who heard him will agree with me when I say that as a clinical teacher Hutchinson was unique. He had so many interests, such a vast storehouse of experience and a prodigious memory, that he was able to focus light from so many points upon the subject which he had in hand, and to leave an indelible impression on the minds of his hearers. A man of extraordinary industry, his contributions to surgery and to ophthalmology were in themselves remarkable enough, but when we consider the additions which he made to our knowledge of syphilis, especially in his recognition of the later stages of the hereditary disease, and his careful and accurate descriptions of so many of the rarer forms of skin disease, we feel amazed that one man could have achieved so much. Full of years, honoured and respected the world over, we may with pride hand on to our successors the memory of Jonathan Hutchinson and his work.

Dr. Daldy informs me that the British Medical Association last held its annual meeting at Brighton in 1886. In that year there was no Dermatological Section, but several important communications of dermatological interest were made. Professor Liebreich read a paper introducing lanoline to the profession in England, and Dr. Mackey communicated a paper on the use of resorcin in cutaneous diseases. A paper was also read by Dr. Handford on the pathology of the seborrhoeic affections of the hair follicles. The study of the diseases of the skin has grown so wide that an annual exposition of the recent advances made in the subject is expected, and it speaks well for the vitality of our specialism that we have so full a programme even with the International Congress occurring in a fortnight.

The intensity of specialism which is so prominent a feature of modern medicine does not permit the development of such all-round men as Jonathan Hutchinson, but it is important that we dermatologists should not forget that our branch of study is but a part of general medicine. We have learnt much from the consideration of the lines of research carried on in other branches, and especially from the work of the bacteriologist and the clinical pathologist. It would be perhaps presumptuous for a practising dermatologist to suggest that workers in our own field may have contributed something which is of practical value to the general physician and surgeon, but I think we can feel pride at the results of the application of the methods of bacteriology to the study of the fungi of ringworm. We are to-day to discuss the fungous affections of the glabrous skin, and I think that you will agree with me that this subject shows very well the trend of modern investigation.

We shall discuss affections which at one time were placed in the great class of the eczemas, and which we now know to be the inflammatory reaction of the skin to the presence of certain fungi. With the acquirement of this knowledge accurate diagnosis is possible, and with it rational and successful treatment. Then, again, our knowledge of the closely related streptothrix organisms has received important additions. At Liverpool last year Dr. de Beurmann gave us a valuable account of his work on the sporotrichia, and we now know that certain gummatous affections which were previously indistinguishable from syphilis and tuberculosis are caused by this type of organism, and, moreover, that in their localized stages they are amenable to treatment by the iodides.

An important advance in syphilology during the year is of the greatest interest to dermatologists. It is the demonstration by Noguchi and others of the *Spirochaeta pallida* in the brain in general paralytics, and in the cord in some cases of tabes dorsalis. The importance lies in the fact that in many instances the patient comes to the dermatologist for the treatment of his early cutaneous affections. Whether the early diagnosis of syphilis which is now possible in practically every case by the demonstration of the spirochaetes in the serum from a chancre, or by the Wassermann test, and our better understanding of the necessity for early and intensive treatment will prevent these grave nervous sequels, time alone can show.

But we have to record another important advance, one which may be of incalculable good to the community, and that is the movement, and fortunately it is a powerful movement, to deal boldly with the whole question of venereal disease. As medical men we must rejoice that important lay journals in this country have opened their columns to the appeal of the profession for the appointment of a Royal Commission; and I beg to offer my sincere congratulations to the pioneer of the movement, Sir Malcolm Morris, on his being able to overcome at last some at least of the prejudice which has always surrounded this thorny question. I trust that medical men and women everywhere will support this movement, and will do all in their power to get light thrown upon this dark subject, and make every endeavour to dispel the ignorance which exists on these grave issues.

There are many interesting problems awaiting solution in connexion with some of the commonest diseases of the skin, and some of our greatest difficulties lie now in the group of conditions which we have labelled "toxic." One of the most characteristic of these—lupus erythematosus—has been chosen for the second discussion. Here we are at present outside the field of experimental medicine, and we have to accumulate facts and draw deductions from them. In this connexion I cannot allow the opportunity to pass without calling attention to the important series of papers on pellagra which appeared in the BRITISH MEDICAL JOURNAL on July 5th, 1913. Pellagra, like syphilis, is of the greatest interest to the dermatologist and to the neurologist, and until recently it was believed that this country was singularly free from the disease. Dr. Box in the JOURNAL referred to the deaths of two lads who had always lived in the neighbourhood of London, and has illustrated the characteristic conditions by a coloured plate. Dr. Mott and Dr. Sambon also contributed to the same number of the JOURNAL, and

Dr. Hammond published an account of a case he had observed in the Isle of Wight. The publication of these cases has led to other instances being recognized, and we have to realize, as has been the case for some time in the United States, that we have a formidable affection to fight. For a long time, as you know, pellagra has been looked upon as a disease due to poor surroundings, and especially to the use of diseased maize as an article of food. It was classed as one of the "toxic" diseases, but there is reason to believe that it is of parasitic origin, and evidence is being accumulated in favour of this hypothesis. The whole subject is well worthy of the earnest attention of the profession.

DISCUSSION ON FUNGOUS INFECTIONS OF THE GLABROUS SKIN.

OPENING PAPER.

By H. G. ADAMSON, M.D.Lond., F.R.C.P.,
Physician for Diseases of the Skin to St. Bartholomew's Hospital.

THERE has been in recent years a considerable advance in our knowledge of fungous diseases and of the fungi which cause them. The number of these affections has been greatly enlarged, not so much by the discovery of new diseases as by the inclusion in this group of many previously known complaints which have only lately been recognized as of fungous origin.

In this discussion we are concerned only with fungous affections of the glabrous skin, and I shall deal with them under the following headings:

1. Ringworms of the glabrous skin, including ringworm of the groin and ringworms of the extremities.
2. Favus.
3. Actinomycosis, blastomycosis, and sporotrichosis.

Time will not permit me to include the interesting but comparatively unimportant affections pityriasis versicolor and erythrasma beyond mentioning that they are types of very superficial infections of the skin by a mould fungus. Nor shall I deal with tropical diseases.

Additions to Knowledge.

Important additions to our knowledge of fungous diseases of the skin are: (1) The inclusion in the group of body ringworms of certain eruptions due to infection by ringworm derived from animals, particularly from the dog, the cat, the horse, and from cattle. (2) The final proof that eczema marginatum of the groin is really a ringworm, and the discovery that many so-called eczemas of the hands and feet are also ringworms. (3) The demonstration of the animal origin of certain forms of favus; and above all (4) the discovery of the new disease sporotrichosis, formerly mistaken for syphilis or tubercle, but due to a deep invasion by a mould fungus.

Of tinea circinata, or body ringworm, there are many varieties. The fungi which give rise to them differ in virulence, and consequently we get different types of eruption corresponding with the varying degrees of inflammatory reaction.

For clinical purposes we may divide these "body ringworms" into three groups: (1) Red scaly patches or rings, generally associated with the ordinary ringworm of the scalp; (2) somewhat more inflammatory rings due to infection from the cat; (3) highly inflammatory ringworms derived from horses and cattle.

Body Ringworms.

As regards the first group, any of the ringworms of the scalp of small-spored and large-spored varieties may be accompanied by ringworm of the body, face, limbs, or trunk, in the same patient or in some one associated with the patient. The eruption consists of sharp circular patches or rings, red and slightly scaly, representing a mild form of inflammatory reaction. The lesions are generally multiple, sometimes they are exceedingly numerous. When the scaly rings are very numerous and widespread, associated or not with scalp ringworm, one may always suspect a microsporon of animal origin—either from the dog, cat, or horse—the affection appearing in these animals as a form of "mange."

The second group—namely, those due to a large-spored ringworm derived from the cat—are seen commonly in children. There is generally a single ring (or at most two or three) which is more inflammatory than those accompanying scalp ringworm and has its margin studded with tiny vesicles—the so-called "herpes vesiculeux" of old French writers. An inflammatory vesicular ringworm always suggests cat origin and the advisability of inspecting the domestic cat for bald patches, sometimes scaly or crusted, and from the surface or margins of which infected hairs can be obtained. The third group comprises the ringworms derived by infection from the larger animals, horses and cattle. They are seen on the hands or arms of farm labourers and of those who have to do with horses; and sometimes the beard region may be infected by these fungi. The eruption is usually single and it is always markedly inflammatory, in the form of a raised, sharply margined disc or nodule covered with small pustules—the "folliculitis conglomerativa" of the older writers. A noteworthy feature in regard to these inflammatory ringworms of animal origin is that they have a tendency to spontaneous cure, and that a patient once infected is protected against a subsequent attack.

Ringworms of the Groin and Extremities.

The group formed by ringworm of the groins and extremities is particularly interesting from the clinical side, since some of the eruptions it comprises have been until comparatively recently mistaken for eczema. The old name for ringworm of the groin was "eczema marginatum." Although the mycelial parasite was discovered in the scales so long ago as 1864, its relationship with ringworm has remained a disputed point until finally settled by the cultivation of the fungus by Sabouraud in 1897. Sabouraud has shown that the disease is a ringworm due to a fungus distinct from all others. It is one which attacks only the flexures of the groins, the axillae, the fold under the mammae in women and the clefts between the toes and fingers. Curiously enough it never invades the hair; and Sabouraud has named it for this reason "Epidermophyton," as opposed to "Trichophyton." During the past ten years this eruption, eczema marginatum or tinea cruris, has been prevalent in this country among men of all classes, often in epidemics in schools, colleges and other institutions, women being but seldom attacked.

The observations of Whitfield in London and of Sabouraud in Paris have taught us that, associated with this ringworm of the groin, there is often an eczematoid eruption of the toes, or less often of the fingers, and that many so-called chronic eczemas of the toes or fingers are really ringworms. The practical importance of this knowledge is obvious. Both ringworm of the groin and eczematoid ringworm of the toes are exceedingly chronic affections: if treated as eczema they will last for years; with treatment for ringworm they may be cured within a few days. Tinea cruris begins in the groin and extends down the inner side of the thigh on to the scrotum and backwards between the buttocks towards the coccyx. Its characteristic features are: (1) The wavy and festooned margin, studded with minute vesicles at its outer edge, scaly towards its inner edge, and enclosing a buff coloured area; (2) the chronicity of the eruption, its occurrence in epidemics, especially among men, and the frequent secondary invasion of the axillae and of the interdigital spaces. Between the toes the disease appears as red "peeled" areas, sometimes weeping, with scaly margins, extending a little way on to the sole or dorsal surface and a little way on to the toes and foot. Sometimes on the backs of the toes and foot the margin is vesicular. A point of practical importance is, therefore, in all cases of "eczema" between the toes, to inquire as to the previous or present existence of groin ringworm. Another practical point is that ringworm of the groin cannot arise by infection from ringworm of the scalp, because it is produced by a different fungus. Infection takes place from another groin ringworm—in rare instances from husband to wife, generally from one male to another, probably by means of closet seats.

But this eruption associated with ringworm of the groin is not the only form of ringworm of the extremities. Ringworm may occur on the hands and feet from infection by one or other of the human or animal ringworms. Among others the large-spored ringworm of the cat may occur on the fingers or hands, or even on the palms, and simulate eczema. The fungus, which gives a violet culture

and which gives rise to one of the common forms of scalp and beard ringworm, may also produce vesicular lesions on the fingers and hands, and this particular fungus may even give rise to bullous eruptions. All these ringworms of the extremities are revealed by the sharp margin of the eruptions and the finding of fungus in scrapings. There is also a very striking form of ringworm which occurs between the toes and extends a good way back on to the soles of the feet, in which the thick epidermis of the sole is, as it were, peeled off, leaving a red surface with overhanging margins. This is the plantar ringworm of Djelaleddin-Mouktar. It is generally of animal origin, the naked feet having become infected in walking over floors on which pet animals suffering from ringworm have dropped hairs. I have observed several examples of this type of ringworm, but have no photographs of my own cases, and so show a reproduction of the classical model of Baretta in the St. Louis Hospital museum.

Treatment of Glabrous Skin Ringworms.

The treatment of ringworm of the body and extremities is simple. All we have to do is to destroy the fungus in the horny layers by some local antiseptic. There is no indication for *x*-ray applications. One of the most generally employed applications is iodine; and for the groin ringworms, chrysarobin or Goa powder is a well-known remedy; but no application is so rapid in its curative effect and so cleanly as the ointment suggested by Dr. Whitfield and containing gr. 15 salicylic acid and gr. 15 benzoic acid to the ounce. Even the groin ringworms and the eczematoid ringworms of the fingers and toes, hitherto difficult to cure, are rapidly cleared off by this new application.

Favus.

We come now to *Favus*. Several varieties are known. Apart from the common favus of the scalp, due to the *Achorion schonleinii*, there have been recorded: Favus of the mouse, *Achorion quinckeanum;* favus of the horse, *Achorion gypseum;* favus of the fowl, *Achorion gallinae;* and quite recently, by Bruno Block of Bâle, another mouse favus, *Achorion violaceum*. Each of these varieties of animal favus has been communicated to human beings. But except by mouse favus, human infection from an animal is very rare. Favus of the scalp (due to *Achorion schonleinii*) was until recently not uncommon in East London among Polish or Italian children, but it has now been practically eradicated by isolation and *x*-ray treatment carried out under the direction of the London County Council.

We still occasionally see in London examples of mouth favus of the glabrous skin. The eruption appears in the form of red scaly rings indistinguishable from ringworm except by culture, or unless, as often happens, the lesion bears one or more of the typical sulphur yellow scutulae or "favus cups." The fungus in culture is a luxuriant white downy growth more resembling the cultures of ringworm than that of ordinary favus. In 1909 I showed, at the Dermatological Society, cultures of *Achorion quinckeanum* obtained from a favus eruption on the neck of a baby which slept on the floor, and from a mouse with favus on the head caught in the same room. Benno Chajes and Tomasczewski have recorded similar occurrences. I have since met with two other cases of mouse favus in human beings, and Dr. MacLeod and Dr. Bolam of Newcastle have also recorded cases. Mouse favus in human beings is therefore perhaps not very rare. It gives rise to eruptions on the glabrous skin which are readily cured, and does not cause scalp favus. This is a practical point, for it assures us that the efforts of the London County Council to stamp out favus of the scalp will not be nullified by the reintroduction of the disease by means of infected mice.

[Lantern slides were shown of ringworm derived from the dog, the cat, the horse, and from cattle, and of favus from the mouse.]

Contrast between Infections of Human Origin and those Derived from Animals.

If we now consider these infections as a whole we are able to draw a striking contrast between those peculiar to human beings and those derived from animals. As regards the "human" forms, it would seem that the body has become accustomed to these fungi and does not greatly resent their presence. Therefore there is but little effort at defence—that is to say, but little inflammatory reaction; and, too, there is little, if any, general immunity reaction, so that the disease continues to invade fresh areas and may last for years and years, as seen in the case of groin ringworms and interdigital ringworms, in tinea tonsurans, in tinea of the nails and in human favus, and, it may be added, in pityriasis versicolor and in erythrasma. On the other hand, the animal ringworms and animal favus give rise to more or less violent local inflammatory reactions in human beings. In other words, there is a more marked effort of defence which often ends in rapid spontaneous cure. There is also a considerable degree of general immunity reaction, as shown by the fact that fresh areas are seldom involved and that the patient is protected from subsequent attacks.

A noteworthy feature of all these infections is that the invasion of the fungus is confined to the horny cells. It grows only in the horny layers of the epidermis, in the hairs, or in the nails, and does not penetrate into the deeper tissues. The inflammatory reaction which occurs as a result of the invasion, and which represents an effort at defence against this invasion, is brought about, not by the advance of the fungus into the deeper tissues, but by the poisons which it excretes as it grows in the horny layers. Thus it is that we never get lymphatic gland infection nor generalization through the blood stream, however virulent the type of fungus.

Deep-seated Fungous Infections.

Finally I come to the important group of deep-seated fungus infections, which include *Actinomycosis*, *Blastomycosis*, and *Sporotrichosis*. Actinomycosis is a rare disease in this country, and the skin is not often primarily invaded, but it is involved from a more deeply-seated infection. Blastomycosis was first described in America, and has been chiefly met with there. No authentic case has been recorded in this country.

A complete account of sporotrichosis was given at the last annual meeting of the British Medical Association by Dr. de Beurmann, and I shall but briefly recall the main facts. The fungus which causes sporotrichosis is, in culture, very similar to that of many ringworms, and it consists of similar mycelium and fruit organs. But in the human body it behaves very differently from the more superficial infections, Instead of flourishing in the horny tissues, it invades the deeper structures, gaining entrance by a wound in the skin or mucous membrane. It does not there multiply like ringworm in the form of mycelium and mycelial spores, but appears to produce specially resistant spores which are able to live in the deeper tissues. It may gain entrance to the lymphatics and give rise to secondary lesions; and to the blood-stream, and become generalized; and it may even endanger life. It is now known that sporotrichosis may invade not only the skin and mucous membranes and lymphatics, but any organ of the body. Against this invasion the tissues react by fixed cell proliferation, serous exudation and phagocytosis, so that there are formed gummatous swellings recalling those of syphilis and tubercle. It is indeed with these diseases that sporotrichosis has been hitherto confused.

The discovery of sporotrichosis was made by Schenk in America in 1898, and two further cases were reported by Hektoen and Perkins in 1900. It was then forgotten until 1906, when Gougerot in Paris, while making a systematic study of atypical forms of cutaneous tuberculosis, again discovered the sporotrichosis fungus. From this time the disease has been studied by many observers, but most exhaustively by de Beurmann and Gougerot, to whom we owe the greater part of our knowledge of the subject. Over 200 cases have now been reported in France and other Continental countries and America, but in spite of the fact that dermatologists have been on the look-out for the disease in this country, not more than two or three indigenous cases have been recorded.

Three cases have come under my own observation: one was infected in South America, one probably in the United States, and one only in London, and they serve to illustrate the three main types of the disease.

[The author here exhibited lantern slides of these cases. One showed the American type, in which there was infection by a wound on the hand and a secondary chain of gummata along the lymphatics. The second was one of the patient who had at

no time been out of London, and illustrated the type of disseminated gummata. This patient also had sporotrichial synovitis. The third was borrowed from de Beurmann's book, and illustrated a type imitative of lupus verrucosus, of which Dr. Adamson had published an example in a patient who had recently visited the United States. Characteristic cultures of sporotrichosis obtained from these three cases were also shown.]

In regard to the treatment of sporotrichosis, it may be said that the eruptions clear upon the administration of potassium iodide in large doses, a drug which we have long known to be useful in actinomycosis, but the treatment must in some cases be a prolonged one in order to effect a complete cure.

The immediate practical lesson of these new discoveries is that in cases of gummatous lesions in the skin and other organs which do not conform exactly to those of syphilis or of tubercle, we ought to consider the possibility of a fungous infection, and particularly not to be misled into the diagnosis of syphilis because these lesions tend to resolve when potassium iodide is given.

The systematic bacteriological study of cases suspected to be sporotrichosis has led to the fnrther discovery of other nearly related diseases, and it seems probable that the recently acquired knowledge of sporotrichosis is only the beginning of a new chapter in the study of these deep-seated fungous infections.[1]

REFERENCE.
[1] The Present State of the Question of Mycoses, de Beurmann and Gougerot, *La biologie médicale*, 1912.

DISCUSSION.

Sir MALCOLM MORRIS (London), F.R.C.P., urged the importance of the diagnosis of ringworm of the groins, axilla, and toes. The disease was not as common, he believed, as it was a few years ago. He urged patients to submit to strong treatment with chrysarobin, which required complete rest. The pain might be severe but the cure was rapid. Care must be taken to get rid of trace of disease from nails, or relapses were certain.

Dr. R. A. BOLAM (Newcastle-on-Tyne) said that at a meeting of the British Medical Association, where those practising dermatology came closely in contact with their colleagues in general work, it was proper to emphasize the necessity of the investigation and identification of the type of fungus in any particular case under notice. There were direct and immediate benefits in the way of prognosis and treatment, and there was the direct and ultimate benefits in determining the original sources of contagion. Ringworm of the glabrous skin ought eventually to be practically extinguished as being a preventable disease. In regard to the type of reaction of the skin to the common human type of small-spored ringworm, he would record his opinion (based on the results of cultural investigation of a considerable number of cases) that not merely macular lesions of a relatively insignificant type result, but that large and numerous lesions, particularly double or triple ringed lesions, were constantly encountered. These more striking lesions were not so frequently the result of cat infection as was often suggested. Those ringworms of the second type of a more florid and more rapid reaction were especially worthy of careful investigation with a view to isolating the fungus and tracking down the original source of infection. It was frequently possible to determine the animal from which the contagion arose, and to take prompt steps to prevent further spread. The chronicity of infections of the groin type of ringworm could not be too strongly insisted on, and the relatively common involvement of the toes and fingers. An important point was that the toe and finger lesions might persist many years after the groin affection had cleared up. In previous years he had treated as pompholyx cases which on further investigation had proved to be examples of a persistent epidermophyton infection. The great difficulty in the treatment of groin ringworm was that of persuading the patient to submit to lie up for a period so that energetic measures might be taken. If the social difficulties which arose out of the very general impression that it was often a result of cohabitation could be dissipated, and it could be established definitely that contagion readily occurred through clothing and in other ways, much of the reluctance to undergo a thorough course of treatment would doubtless disappear.

Dr. GEORGE PERNET (London) referred to a paper on 130 consecutive cases of ringworm he had published in 1891, and since then he had made various contributions to the subject. He had found that *Microsporon audouini* might give rise to multiple rings apart from animal ringworm. *M. audouini* also gave rise to multiple macular lesions as well as rings, and he agreed with Dr. Bolam on this point. With reference to the epidemic ringworm of the groins which was so prevalent a short while ago, he noted that it was practically limited to the well-to-do and wealthy classes. Some years ago, when working with the late Dr. Radcliffe Crocker, he had examined so-called eczema of the toes for fungus, and found it on several occasions. Sulphur and carbolic acid ointment answered well in these cases, but the socks, slippers, etc., should always be well disinfected or got rid of. With regard to favus corporis, he had observed very crusted, turret-like lesions, and traced the infection to a kitten whose ears were affected. As to Professor Wild's cases, he (Dr. Pernet) had observed such affections in men unpacking Japanese goods, but he had been unable to find a fungus in the vegetable packing material.

Professor R. B. WILD (Manchester) agreed with Sir Malcolm Morris that ringworm of the groin had diminished in this country during the last few years, and attributed it to the discussion at the Royal Society of Medicine. Possibly in some of the cases where mycelial fungi were found they might be saprophytic and evidence of their causal relation with the dermatitis was wanting. With respect to treatment, a combination of sulphur, salicylic acid, and phenol was usually sufficient, but in obstinate cases a combination of salicylic acid and resorcin was effectual, but it was necessary to provide for thorough disinfection of the socks and underclothing, for the chronicity of the disease was often due to reinfection. Ringworm of the animal type might be caused on the arms of workers in straw, such as men engaged in packing, and some of them might be very severe. Favus had a peculiar tendency to recur upon the same site after even several years' interval.

Dr. FRANK BARENDT (Liverpool) emphasized the importance of examining the whole body in cases of local parasitic infections. He had found favus of the body, of which the patient was not cognizant, on glabrous regions, and he did not think it so rare as Dr. Adamson believed. With regard to the treatment of eczema marginatum, he extolled the value of chrysarobin ointment. Its drawbacks should be explained, and a dusting powder of zinc oxide, starch, and talc would mitigate the chysarobin dermatitis, which it should be the object of the physician to produce. This done, a diluted white precipitate ointment with benzoated lard would bring the case to a successful issue. Whilst under treatment soap and water should be excluded, and the region, if necessary, cleansed with warm olive oil.

Dr. A. W. WILLIAMS (Brighton) had a toe ringworm case last year of interest on account of its long duration. The patient, a retired army officer, developed the disease during the Indian Mutiny, and had been troubled without remission ever since. The groin and hands were not affected.

Dr. ALFRED EDDOWES (London) mentioned a case of ringworm caught from a hedgehog. As a useful remedy in the doctor's hand, he recommended a mixture of carbolic acid and rectified spirits. This could be applied at each visit, in order to pick out the worst spots. Of course after this strong application an ointment should be smeared on and used constantly. For nails he strongly advised mercurial plasters, cleaning with ether, and filing down with a corn rubber.

Dr. S. E. DORE (London) asked Dr. Adamson if he could give any idea of the proportion of cases of ringworm of the fingers and toes in which the epidermophyton and trichophyton fungi respectively were present. It was not possible to distinguish the fungi microscopically, and cultures were often extremely difficult to obtain; but

his impression was that trichophyton infection of the toes and fingers was commoner than was generally supposed. Ringworm of the toes was very common and often unsuspected until attention was drawn to it by the occurrence of ringworm of the groin or other part of the body. Those who had had experience of children's out-patient departments in this country could not fail to recognize the frequent association of small-spored ringworm of the body in children with ordinary *Microsporon audouini* of the scalp. As regarded the source of infection by the epidermophyton, the speaker had had a case in a nurse who had contracted at the same time ringworm of the toes and molluscum contagiosum at a Turkish bath.

Dr. F. GARDINER (Edinburgh) pointed out the chronicity of tinea of limbs. He had seen one case lasting ten years. Favus and tinea corporis were sometimes indistinguishable clinically. Two cases he had found diagnosed as tinea, yet cultures showed cat favus. In some cases along with the tinea circinata of the body it was very necessary to treat the hyperidrosis associated. He also mentioned a case simulating sporotrichosis, in which cladosporium was found, and another of circinate dermatitis, in which *Aspergillus niger* was present.

Dr. SEQUEIRA (London) referred to a remarkable case of endothrix ringworm of the glabrous skin, with granulomatous swellings, which he had published. The eruption was of extraordinary chronicity, and the chronicity depended in the main on the difficulty of curing the affection in the nails. The patient, a young man, and his two sisters, had had this eruption for several years. The fungus was the *Trichophyton plicatile*, and this parasite was the common fungus found in Denmark. The patients lived near the river Thames. The girls were engaged in paper sorting, but they were not known to have come in contact with sailors or others trading with Denmark. He also mentioned a recurrent case of ringworm of the fingers, simulating cheiro-pompholyx, but recurring in the winter, in which the source of infection appeared to be a pair of fur-lined gloves. On the patient discarding these gloves the attacks ceased. He referred also to a case of ringworm of the feet and toes, where the infection appeared to be contracted from a pair of slippers worn at a Turkish bath.

VERONAL RASHES; WITH A NOTE ON LUMINAL.

By GEORGE PERNET, M.D.Paris,

Dermatologist to the West London Hospital, and Lecturer on Dermatology, West London Post-Graduate Medical School.

SINCE Wöhler in 1828 first produced urea synthetically, and accidentally[1] apparently, from ammonium cyanate, synthetic chemistry had gone on apace. But it was not till 1904 that the method for manufacturing veronal from urea was published.[2]

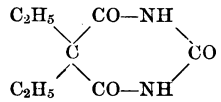
My first case of veronal rash occurred in 1906. The patient was a lady (Casebook E., 419) who had taken veronal for sleeplessness. On May 7th a blotchy rash appeared, but by May 10th it was fading. On the night of May 11th the patient took gr. vijss of veronal, and by 1 a.m. of May 12th the rash was worse. I first saw the patient on May 12th, when there was a diffuse blotchy erythematous eruption mixed up with circinate lesions, showing a tendency to vesiculation in their centres, distributed about the arms, neck, trunk, and legs. In a word, it was an erythema toxicum, which has been no doubt well known to most of us for some time, and so need not delay us further. One point about this case, however, was of some interest, namely, that the eruption was worse on the right arm than on the left, which had recently been affected by a neuritis.

Another case which came under my notice in 1910 (Casebook H., 529) is worth recording here. The patient was also a lady, who had two years previously whilst abroad suffered from an eruption of the face with blistering of the lips, after taking veronal. The roof of the mouth at the time felt hot and dry. She had had another attack of the same kind abroad, again after taking veronal. One month before I saw the patient she had taken malonal, which is only veronal under another name; but she did not know this. The fact is, many synthetic compounds are rechristened from time to time, which is very unfortunate. Industrialism being all-powerful, nothing can be done to prevent this. Other synonyms of veronal are hypnogen, malourea, deba. This by the way.

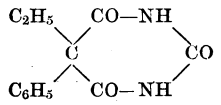
To return to the patient. She took one small tablet of malonal, and five minutes after her mouth began to tingle and the head to feel hot. The eruption then occurred. She described the lesions about the face, lips, and hands as watery blisters, and these were accompanied by general swelling of the head, orbits, and nose. For the first time the chest was also involved, and the remains were still present when I saw her—namely, three or four circular areas with dilated vessels.

Here we had to deal with a severe bullous rash. The question of anaphylaxis at once occurs to one. Warned that malonal was veronal, no doubt the patient has profited by the knowledge, for I have not seen her since. I am sure she would have let me know about any further trouble, for she was an old patient of mine.

Another case I am justified in mentioning in this connexion is one of luminal rash. Luminal is a derivative of veronal, the ethyl group of which has been replaced by a phenyl group, thus—



(Veronal.)



(Luminal.)

The patient in this case was also a lady (Casebook J., 531). A fortnight before I saw her, after taking 3 grains of luminal a day, she developed an erythematous rash, which got practically well. On resuming the luminal the rash recurred, and when I first saw the case the eruption had been present for two days. It was extensively distributed about the neck, trunk, and limbs, slightly affecting the face. In appearance the erythematous rash was morbilliform, and in some areas, especially about the lower part of the back, it was *en nappe*, sheet-like, as a result of coalescence. The palms and soles were not affected. The second attack was much worse than the first. Anaphylaxis again.

At that time luminal was new to me, and I compared in my mind the rash with eruptions I had seen as a result of veronal. In a general way I had come to the conclusion, instinctively, that the phenyl group was one to be feared as a factor.

I may add that I have never prescribed veronal. Nor do I consider it should be used incidentally in skin cases, especially of the bullous type. I have referred to this in another place.[3]

It is not my business to touch on the general effects of veronal in this place, but those who are interested in the matter will find details of its poisonous properties in Kobert's book on toxicology.[4]

REFERENCES.

[1] Remy de Gourmont: *Promenades Philosophiques*, 2ème série, 1908, p. 131. [2] Fischer: *Annalen der Chemie*, 1904, cited by Martindale and Westcott's *Extra-Pharmacopoeia*, fifteenth edition, 1912, p. 778. [3] Pernet: A Case of Pemphigus Vegetans Treated on General Lines and by Means of Vaccines (Boeck Festschrift, *Arch. für Derm. u. Syph.*, Band cx, 1911). [4] Kobert: *Lehrbuch der Intoxicationen*, 1906, vol. ii, pp. 963-4.

DISCUSSION.

Professor R. B. WILD (Manchester) thanked Dr. Pernet for bringing forward these cases, as it was important for them to be recognized in the case of commonly used drugs. The eruptions described as the result of narcotic drugs were all of a vasomotor origin and usually of erythematous type, and the tendency to the eruption appeared to coincide with the narcotic power of the drug. This was shown well in the urethane series, where urethane eruption was rare, veronal commoner and due to a smaller dose, while with luminal in which a phenyl group was introduced the dose which produced an eruption was smaller still.

Dr. ALFRED EDDOWES (London) mentioned a case in which he had seen a herpetic eruption, whose vesicles ultimately coalesced to form bullae, follow on the administration of trional.

DISCUSSION ON THE NATURE, VARIETIES, CAUSES, AND TREATMENT OF LUPUS ERYTHEMATOSUS.

OPENING PAPER.

By J. M. H. MACLEOD, M.D., M.R.C.P.,

Physician for Diseases of the Skin, Charing Cross Hospital, and the Victoria Hospital for Children; Lecturer on Skin Diseases, London School of Tropical Medicine.

IN introducing a discussion on lupus erythematosus, its nature, varieties, causes and treatment, I am reminded that for more than half a century, ever since M. Cazenave recognized the disease in 1851 and gave it its unfortunate and confusing name, the subject has been one of the favourite themes for discussion at dermatological societies and congresses, but that in spite of this and the vast literature which has accumulated around the subject, the last word on lupus erythematosus has not yet been said, and there are certain problems connected with it which seem as far from elucidation now as they were when Cazenave published his historical paper.

The subject of lupus erythematosus is a wide one, and any of the above headings would have furnished ample matter for a profitable morning's discussion. Consequently it will only be possible for me in the time at my disposal to deal with it in a somewhat general fashion, to give you a brief review of the present state and limitations of our knowledge of the disease, and to suggest various lines of thought and argument which may serve as guides to the subsequent discussion.

I propose to deal with the subject in the following order—namely, the varieties, nature, causation, and the treatment.

I. VARIETIES.

A.—*Clinical Characteristics.*

The clinical appearances of lupus erythematosus are so familiar that it will be unnecessary for me to describe them in detail, but to refresh your memories I will ask you to look at this series of photographs and drawings, which illustrate the clinical characteristics and main varieties of the disease. Lupus erythematosus is a *multiform affection* with several distinctive types of lesions, between which transitional forms may be met with, which correlate them together. The two chief types are: (*a*) The discoid or circumscribed type, which is chronic in its evolution and course; and (*b*) the acute disseminated type.

(*a*) *Circumscribed Type.*—The circumscribed or discoid variety is the most common type of the disease, forming about 90 per cent. of the cases which have come under my observation at Charing Cross Hospital during the last ten years. It generally affects the butterfly area of the face, but may occur also on the ears, scalp, fingers, and occasionally on the buccal mucosa.

There are several varieties of discoid lesions—namely:

1. A well-defined lesion with a more or less raised border, a rough surface due to a central adherent scale, which, on being raised up, reveals the presence of horny plugs extending down into the follicles.
2. A non-scaly type in which the lesions are raised, pinkish-red in colour, and simulate those of an ordinary toxic erythema, or occasionally suggest lupus vulgaris.
3. An unusual variety characterized by the presence of numerous small telangiectases on the surface of the lesions, and forming about 4 per cent. of the circumscribed cases.

Under the heading of circumscribed lupus erythematosus may be included also the peculiar condition known as "lupus pernio," which forms a connecting link between lupus erythematosus and chilblains. It is met with at the distal extremities of the peripheral circulation—namely, the nose, fingers, and toes, occurs in winter, tends to improve or disappear spontaneously in summer, but may persist indefinitely.

(*b*) *Acute Disseminated Type.*—The acute disseminated type furnishes about 10 per cent. of the cases. In it the lesions develop more rapidly and the area involved is more extensive than in the circumscribed variety. It usually appears first as vivid erythematous patches about the face; these become scaly, spread quickly, and tend to involve considerable areas. It may appear in other situations, such as the neck, chest, back, or limbs, and in severe cases may affect the skin almost universally. The lesions on the face may be so vivid and acute as to suggest a toxic erythema, acute eczema, or even erysipelas. Sometimes they occur as raised erythematous patches, at other times they may be vesicular or even bullous, and in rare instances lesions of the herpes iris type may be met with. It is not uncommon in the acute cases for the mucous membrane of the mouth to be involved.

In some instances the acute dissemination of the disease may supervene on an old-standing circumscribed case, in others the affection may be acute from the onset. The more acute cases are of special interest from the etiological standpoint, as they point to a severe toxaemia, and are not infrequently associated with grave visceral derangements, such as disease of the kidneys or the liver, and more or less marked general symptoms, generally including pains in the joints and a remittent temperature. In some of these cases a fatal issue has taken place in the course of a few weeks from kidney disease, pneumonia, or in a state of profound collapse from some unknown cause.

These acute cases sometimes show a marked tendency to spontaneous remission of the lesions, which are usually followed by slight atrophy and scarring; in rare instances superficial ulceration has been observed in the acute patches.

The two essential clinical features in all the cases, whether they be chronic and discoid, or acute and disseminated, consist of persistent erythema succeeded by atrophic scarring. It is these characteristics which suggested the name "ulerythema" (from οὐλή, a scar) to Unna, and "erythema atrophicans" to Sir Malcolm Morris—names which are both preferable to lupus erythematosus, as they do not suggest a connexion with lupus vulgaris.

B.—*Histological Characteristics.*

The microscopical appearances of sections of lupus erythematosus vary considerably in detail, according to the stage of evolution and type of the lesion examined; but in all the specimens marked changes can be detected both in the corium and in the epidermis, those in the corium being primary and essential, while those in the epidermis are secondary. The earliest changes take place in and around the blood vessels of the subpapillary and papillary layers and in the capillaries around the pilosebaceous follicles and the sweat glands, and consist of dilatation of the vessels, followed by an extravasation of serum, oedema, and a perivascular cellular infiltration composed of small round connective tissue cells, mast cells, and occasional plasma cells. The infiltration is most marked in the upper layers of the corium, but may extend down to the hypoderm, along the sweat ducts and glands. Degeneration of the fibrous elements takes place in the infiltrated areas, the collagen becoming rarefied and the elastin destroyed. In consequence of the oedema and degenerative changes in the fibrous tissue a peculiar condition known as "canalization" is produced, in which the tissue spaces become widely dilated. The overlying epidermis also becomes oedematous, the basal layer blurred or absent, and the interepithelial lymphatics dilated. The stratum corneum is thickened, especially at the mouths of the follicles and the sweat pores, forming horny plugs; but where the underlying oedema is marked, imperfect corification and scaliness result. In older lesions the hyperaemia and oedema are less marked, the capillaries tend to become blocked with cells, the sebaceous glands to disappear, while the cellular infiltration assumes a more formative appearance with the presence of connective tissue cells and new collagen fibres, indicating the occurrence of a cicatrical process. The histological picture, with its comparatively dry horny or scaly surface and its underlying oedema, has been aptly compared by Unna to a bog covered by apparently sound mossy turf, but which if stepped upon proves unsafe.

II. NATURE AND CAUSATION.

One of the earliest suggestions with regard to the nature of lupus erythematosus was that by Hebra, who christened the affection, six years before Cazenave published his paper, "seborrhoea congestiva," believing that

it had its origin in the sebaceous glands, as he noted as an early characteristic of the lesions the presence of greasy plugs like comedones in the pilo-sebaceous follicles. It was pointed out, however, subsequently that these plugs only occurred in certain types of lesions of the disease, and were not an essential feature, and that instead of consisting of inspissated sebum they were composed of horny material the result of a hyperkeratosis, involving not only the mouths of the follicles, but the intervening epidermis in the affected area. In 1881, at the International Congress of Medicine in London, the nature of the disease was discussed, and the general consensus of opinion was that it was a peculiar type of inflammatory process in which granulation tissue tended to be formed, giving rise eventually to atrophic scarring.

When the tubercle bacillus was discovered by Koch in 1882 it was suggested on various sides that the disease in some way was connected with tuberculosis, and this view has been strongly supported within recent years by French dermatologists.

A.—*The Tuberculous Origin of Lupus Erythematosus.*

The evidence in favour of this view does not seem to me to be convincing. Repeated attempts have been made to demonstrate tubercle bacilli in the lesions of lupus erythematosus, but never with success. Inoculation experiments in susceptible animals have given negative results, and the histological architecture is totally unlike that produced by the reaction of the tissue to the presence of the tubercle bacillus *in situ*. It is asserted, however, by the French school and their supporters that the affection is due to toxins produced by tubercle bacilli situated at a distance from the skin, that it is one of the so-called "toxi-tuberculides" and the result of more or less attenuated tuberculous toxin circulating in the blood.

The following arguments have been advanced in support of this proposition:

1. In a certain number of cases of lupus erythematosus there is a personal evidence of tuberculosis, such as the presence of tuberculous glands, tuberculosis of the lungs or other viscera, or there is a family history of the disease.

In 250 cases collected by Roth, 185 gave evidences of tuberculosis; out of 42 cases of Boeck, 28 were tuberculous; out of 38 reported by Kopp, 18 gave evidences of tuberculosis; and out of 71 recorded by Sequeira and Balean there were personal evidences of tuberculosis in 18, and a definite family history in 34. Against this, however, out of 119 cases collected by Veiel there was a personal evidence of tuberculosis only in 5 per cent. and a family history in 7 per cent.; out of 94 cases exhibited at the Dermatological Society of London there was a record of tuberculosis only in 10 of the patients and a family history only in 2, and in my own experience at Charing Cross Hospital out of 40 consecutive cases only in 6 was there personal evidence of tuberculosis, and in 5 of the 6 cases there was a family history of the disease.

In this connexion it is only fair to concede that in a certain number of cases evidences of tuberculosis may have been missed; on the other hand, in others the diagnosis may have been at fault, and cases of the superficial symmetrical type of lupus vulgaris may have been mistaken for lupus erythematosus.

To reduce the possibility of error in this connexion various tests for tuberculosis have been employed from which somewhat contradictory results have been obtained. In certain cases tuberculin injections have been resorted to. Walther Pick, for instance, injected tuberculin in 29 cases of lupus erythematosus and in only 15 of these a general reaction occurred, and these were all cases in which clinical evidence of tuberculosis had been noted, and only one of these cases reacted locally.

Bunch examined the tuberculo-opsonic index of 10 patients with lupus erythematosus, none of whom showed any personal evidence of tuberculosis, though in 3 of them there was a definite history of it in near relatives, and in 7 of these cases the opsonic index was normal to tubercle.

The von Pirquet and Calmette tests have also been employed, but the results from them were inconclusive.

Agglutination tests have been resorted to by Baris and Dobrovici, who found that the agglutination test for tubercle bacilli was positive in the discoid or fixed type of the disease, and negative in the migratory, suggesting that the former variety was tuberculous.

These findings do not seem to me to prove that either the tubercle bacillus or its toxins are the direct cause of lupus erythematosus, and considering the prevalence of tuberculosis in some form or other, and the comparative rarity of lupus erythematosus in association with it, the connexion between the two might reasonably be regarded as a casual coincidence. On the other hand, it seems equally reasonable to assume that it may be a predisposing factor.

2. The clinical appearances of the lesions of lupus erythematosus may so closely resemble those of lupus vulgaris as to render the differential diagnosis difficult or impossible. This argument has been advanced from time to time in support of the tuberculous theory of the origin of the disease, but it does not bear close scrutiny, for even although lesions may resemble each other clinically they may be due to totally different causes. The type of lupus vulgaris with which it is most liable to be confused is that superficial variety described by Leloir as "lupus érythémateoïde," but the history and the tendency to ulceration in the case of lupus vulgaris, and a microscopical examination if necessary, will usually serve to make the diagnosis certain. The same argument might be advanced in connexion with erythema multiforme and certain late superficial syphilides, for in both of these lesions sometimes occur which so closely resemble lupus erythematosus as to present difficulties in diagnosis to the most careful observer.

3. Another argument which has been put forward in this connexion is that lupus erythematosus may occur in association with lesions of the tuberculide type, such as the papulo-necrotic tuberculides, lichen scrofulosorum, and erythema induratum of Bazin. This association, however, is exceptional and simply corroborates the fact that lupus erythematosus may occasionally occur in tuberculous subjects. Recent observations on the "tuberculides" tend to disprove the view that they are due to toxins eliminated by tubercle bacilli in some diseased focus at a distance from the skin, and point to the presence of the bacilli in the skin, and the bacilli have actually been found *in situ* in the papulo-necrotic tuberculides and positive inoculation experiments on susceptible animals have been done in connexion with erythema induratum. In the case of lupus erythematosus, on the other hand, no one has yet succeeded in demonstrating tubercle bacilli in the skin.

In this connexion it may also be pointed out that, in spite of the innumerable injections of the different tuberculins and vaccines which have been given for diagnostic and curative purposes, there is no record of any having produced lupus erythematosus, though there are several instances recorded in which an eruption of lichen scrofulosorum has followed tuberculin injections.

B.—*Other Toxins as the Cause of Lupus Erythematosus and its Relation to the Toxic Erythemata.*

Apart from the tuberculous toxin, there are certain facts connected with lupus erythematosus which strongly suggest that in certain cases, especially of the acute disseminated type, it is the result of some toxin at present unknown circulating in the blood vessels of the affected area.

Of these the most important are the following:

(*a*) Symmetrical distribution of the lesions. The tendency to symmetry in the distribution of the lesions is a noticeable feature of the disease in cases not only of the circumscribed but also of the acute disseminated type. This seems to point to the action of some poison circulating in the blood.

(*b*) Sometimes the lesions of lupus erythematosus resemble those of the toxic erythemata. This resemblance has frequently been noted, and so close may it be both in regard to the type and distribution of the lesions that a distinction between them may be practically impossible. In some cases of erythema multiforme of the so-called erythema perstans type the lesions may persist for months, and be clinically indistinguishable from the non-scaly type of lupus erythematosus, while in the acute disseminated cases the similarity to erythema multiforme may be so close as to make the differential diagnosis a matter of opinion rather than of certainty.

But not only may these affections resemble one another clinically, but they may do so also in their histology. In erythema multiforme the microscopical appearances show

an acute inflammatory disturbance suggesting the action of a toxin reaching the skin by the blood vessels, while in lupus erythematosus there is an inflammatory disorder of a similar type which goes on to degeneration and obliteration of the blood capillaries. The histology of the two affections points to a difference in degree rather than in kind. In the case of erythema multiforme it suggests the action of a virulent toxin on a healthy tissue, and in lupus erythematosus of a less virulent toxin acting for a longer period in a situation where the circulation is feeble from anatomical or other reasons, causing a chronic inflammatory disturbance followed by imperfect repair and atrophy.

(*c*) Lupus erythematosus of the acute disseminated type has from time to time been found to occur in association with more or less severe general toxaemia connected with disease of the kidneys, cirrhosis of the liver, alcoholism, etc.

Numerous instances are on record where it was associated with nephritis. Four cases in which nephritis was present occur in the records of the Dermatological Society of London. Short described a fatal case with nephritis in which there was marked cloudy swelling and small haemorrhages in the kidneys. In an acute case reported by me in a young woman death took place in three months after the disease appeared with acute nephritis.

A case in which the acute disseminated type was associated with disease of the liver was recorded by Galloway and myself in a woman in which a scar leaving erythema was present symmetrically distributed on the face and extremitiss. The liver was considerably enlarged, and the patient was a chronic alcoholic.

C.—*Association with Circulatory Disturbances.*

The coexistence of lupus erythematosus with defects of the circulation has been observed so often that it would appear to be more than a mere coincidence, and suggests a causal connexion between them. In women it is not infrequently associated with cold hands and feet, a mottled, cyanosed condition of the skin of the extremities, moist palms and soles, a tendency to chilblains, and other evidences of a weak peripheral circulation. Other more serious circulatory anomalies have been observed in connexion with it, such as swelling of the ears and tip of the nose, cyanosis of the cheeks, a profusion of telangiectases, dead fingers, and even more definite Raynaud's phenomena. Lesions due to the combined action of cold and a defective circulation, such as chilblains, may sometimes become persistent, superficially ulcerated, lead to scarring, and be practically indistinguishable from lupus erythematosus. This view is further strengthened by the general occurrence of the disease in situations where from anatomical reasons the circulation is liable to be impeded from the skin being tightly stretched over bones and cartilage, as on the nose, malar prominences, auricles, and scalp.

Conclusions.

In brief, it seems to me that lupus erythematosus can no longer be regarded as a morbid entity due to one specific cause, and that there is not sufficient proof that it is a tuberculous affection, or that where it occurs in tuberculous subjects that it is directly caused by the tuberculous toxin. It would seem to be a persistent erythema, followed by atrophy and scarring, due to a variety of causes in a predisposed individual. The circumscribed cases have probably a different etiology from those of the acute disseminated type, and even different circumscribed cases clinically closely resembling each other may vary in their causation.

The causes, both predisposing and direct, may be thus summarized:

1. *Predisposing Causes.*

(*a*) *Age.*—It is essentially a disease of adult life, the usual age of incidence being between 20 and 40 years, though it has occasionally been known to begin in childhood and even in old age.

(*b*) *Sex.*—It is more common in females than in males, in about the proportion of 3 to 1.

(*c*) *Type of Skin.*—The discoid type seems to be more frequent in individuals with fair skins than in those whose complexions are dark, and a greasy skin with large active sebaceous glands seems to be a predisposing factor.

(*d*) A defective peripheral circulation, due to a weak state of health, anaemia, heart disease, etc.

(*e*) General morbid conditions, such as tuberculosis, rheumatism, etc.

(*f*) A feeble state of the blood vessels, either hereditary or acquired, and due partly to their anatomical situation.

2. *Direct Causes.*

(*a*) Toxins circulating in the blood and reaching the skin; these may be produced in the alimentary tract, or may be the result of a disordered state of some internal organ, such as the kidneys or the liver.

(*b*) Local causes, of which the most common are cold, sudden changes from heat to cold, frostbite, occasionally sunburn, burns from heat, traumatism, bites from mosquitos or other insects, and some local septic condition, such as a boil or an ulcer.

In conclusion, it is dependent on a delicacy or state of weakness of the part affected, in which the circulation is so depressed and feeble that local injury, or the presence of toxins in the cutaneous blood vessels, cause so profound and lasting a disturbance that recovery from it without loss of tissue is impossible.

Treatment.

The disease is one of the most capricious and intractable of skin disorders. Sometimes it shows a marked tendency to heal spontaneously, and at other times it may disappear in a few weeks or months, apparently as the result of some form of treatment, local or general. On the other hand, it may persist indefinitely, or after a period of improvement may show a marked tendency to relapse, either as the result of some general disturbance or from local irritation, or the injudicious use of irritating remedies. By suitable treatment improvement and even cure may be effected. The treatment varies according to the type of case, and not infrequently the failure to benefit the condition is the result of the injudicious choice of the remedy employed. In the circumscribed cases the treatment is chiefly local, while in the acute disseminated type local treatment is comparatively of small importance in comparison with the treatment of the patient behind the disease, and the more or less severe visceral disturbance or toxaemia with which it may be associated. Care must be taken that the prolonged treatment of a local type does not result in irritative changes and the production of epithelioma on the diseased patch—a misfortune which has in several instances been recorded. Cases of the generalized type have been known to clear up under general treatment where practically no local measures were employed. In most cases, however, the best results have been obtained by a judicious combination of both.

General Treatment.

The general treatment is based largely on general medical principles, and absolute reliance cannot be placed on any kind of specific form of medication. In many of the cases there is evidence of a lowered vitality associated with a weak peripheral circulation, or there may be signs of hereditary or acquired disease, disturbances of the alimentary tract, anaemia, or disorders of the heart, kidneys, or other important organs. Such defects must be carefully sought for and dealt with by appropriate means. In connexion with the dietary it is important that anything which tends to cause flushing of the face—such as hot drinks, condiments, alcohol, etc.—should be omitted. All sources of local irritation should also be guarded against, such as brilliant sunshine, extremes of temperature, cold winds, and direct heat.

In the acute disseminated cases it is generally essential to confine the patient to bed, and, since the local condition appears to be due to a general toxaemia, the obvious indication is to eliminate or neutralize the toxins responsible for it. As the exact nature of the toxins is generally unknown, various drugs have been employed which are reputed to have an antitoxic action, such as salicin, quinine, and ichthyol, and certain others in a more or less empirical manner, such as iodine and arsenic. Of these, salicin in doses of from 15 to 30 grains t.d.s., or large doses of quinine, have given the best results. Salicin acts not only on the toxin, but, being a cardiac depressant, it reduces the hyperaemia of the skin, and the action of quinine can be intensified by painting the lesion simultaneously with tincture of iodine.

Local Treatment.

The long list of local remedies which have been from time to time recommended for the treatment of this disease is in itself an indication that their employment has been based on empiricism rather than on a knowledge of the causation of the disease. In the choice of any form of local treatment it is important to remember that lupus erythematosus is much more easily aggravated than cured by local applications. Before selecting any form of treatment the exact type of lesion must be carefully studied, and an appropriate remedy chosen. In every case it is advisable to commence the local treatment in a tentative fashion, and to gradually increase the strength of the application according to the toleration of the individual.

There are three indications which serve as a guide to the local treatment—namely, (1) the removal of the scales; (2) the drying of the lesion, and (3) the reduction of the hyperaemia.

For the removal of the scales an effective method is to scrub the lesions with soap spirit lotion on a piece of wet flannel. Where the scales are thick and adherent the application of a 2 or 3 per cent. salicylic ointment or plaster may be necessary.

With the object of drying the lesions bland powders, such as zinc pastes, or lotions containing an insoluble deposit, may be employed. A useful powder consists of equal parts of zinc oxide and magnesium carbonate, the latter absorbing a larger quantity of moisture for its bulk than any other powder. Of the lotions, the well-known calamin-zinc lotion is generally useful, and of the pastes the ordinary zinc paste of Lassar. Where the lesions are active the scales should be removed daily by soap spirit followed by the application of calamin lotion; where they are more resistent and chronic, salicylic ointment should be applied at night, and the lotion or paste in the morning.

For the purpose of reducing the hyperaemia ichthyol has gained a reputation from its power of diminishing local congestion. It may be employed in aqueous solution, in ointment form, or incorporated in zinc starch paste or as a plaster. Adrenalin solution (1 in 1,000) has also been recommended for this purpose, but its action is transient. A simple and mechanical method of reducing the hyperaemia is to paint the lesions several times a day with contractile collodion, containing 1 per cent. of salycilic acid to destroy the scales.

At one time a favourite mode of treating the lesions was by applying caustic remedies, such as silver nitrate, acid nitrate of mercury, corrosive sublimate, etc., but although these were capable of removing the disease they were apt to produce an unsightly scar and could only be recommended in small scaly chronic patches. Of the milder caustics, pyrogallic acid 6 per cent. applied daily in a paste, or a 10 per cent. resorcin lotion dissolved in spirit and painted on the lesions once a week, sometimes gives good results.

In the case of minute lesions operative measures such as electrolysis, the actual cautery, and multiple scarification may be employed with benefit by skilled hands.

In addition to the above methods of treatment various physical methods have been used with more or less success, such as ionization, refrigeration, Finsen light, radium, etc.

Ionization with zinc sulphate is, in my experience, one of the most useful and reliable of these methods. A 2 per cent. solution of zinc sulphate is employed, and a current of 2 to 5 milliampères passed for about fifteen minutes a sitting; after the ionization a bland protective paste is applied to the part.

Refrigeration with solid carbon dioxide sometimes gives good results, but is uncertain and occasionally aggravates the disease. It should on no account be employed where the lesions are actually spreading, but should be reserved for chronic circumscribed lesions of the seborrhoeic type. The applications should be short in duration, from five to ten seconds with medium pressure, and anything in the way of a severe reaction avoided.

Finsen light occasionally gives beneficial results, especially in old-standing lesions covered with thick adherent scales, but is harmful where the patches are recent and active.

The *x* rays, in my experience, have given disappointing results; in small doses they stimulate the skin and seem to irritate the lesions, and in large doses are liable to cause a permanent dilatation of the vessels and to replace the patch of lupus erythematosus with a telangiectatic scar.

Radium has also been employed, but with doubtful success, and although theoretically it is known to have a selective action on the blood capillaries, causing them to disintegrate and to become replaced by new fibrous tissue, I have not succeeded in obtaining this result practically.

Various electrical methods have also been used, such as high frequency, static discharges, etc., but these are of comparatively little value and liable to irritate rather than improve the condition.

DISCUSSION.

Sir MALCOLM MORRIS (London) said that the true cause of lupus erythematosus was still unknown, and this in spite of all the work done by a large number of workers, He divided the cases into two groups: (1) General toxaemic; (2) local. The former, like erythema multiformes, was due in many cases to some intestinal lesion or other internal disease. It occurred in delicate people with chilblain circulation. The local variety might be due to exposure to sun, cold wind, bites of insects, etc. The treatment in the first group consisted in careful attention to the general health, with gentle local treatment only. The local cases were benefited by the application of iodine, CO_2, and radium.

Professor R. B. WILD (Manchester) said: I have gone through my hospital case-books for the past twenty years, and found that in 30,000 cases there occurred 161 cases of lupus erythematosus, of which 19 could be traced as re-admissions, leaving 142 individual patients; this gives a percentage of 0.47, as compared with 0.63 per cent. given by Dr. Radcliffe Crocker for his hospital cases in London. It may be of interest to compare this figure with the number of cases of lupus vulgaris—namely, 1.5 per cent. — and to all forms of skin tuberculosis, which aggregated 2 per cent.; also to the syphilitic cases, 4 per cent. Of the 142 patients, 94 were females (66.2 per cent.) and 48 males (33.8 per cent.); the average age of the females was, when first seen, 34.7, and of the males 31.5. The youngest patient was a boy of 8 and the oldest a man of 66; the youngest female was 15 and the oldest 63. In private practice the proportion of lupus erythematosus cases is much larger. Dr. Crocker had a percentage of 1.8. I have found in the last ten years exactly 2 per cent. among my private cases, and of these 80 per cent. were females and 20 per cent. males; the average age was distinctly higher than among hospital patients—namely, 38 for females and 37 for males, the youngest a girl of 14 and the oldest a woman of 64. It would appear that the disease attacks the poorer class of patients at an earlier age than it does those in better circumstances, as the latter apply for treatment sooner than the former owing to the disfigurement produced, and the disease is usually much less advanced when first seen in a private case than it is in a hospital case.

The distribution of the lesions is of some interest, and I have investigated this in a number of cases, especially in view of the textbook insistence upon the "butterfly-patch" distribution of the disease. This is, I think, unduly emphasized, and often prevents a diagnosis being made at an early stage, when small lesions appear on other parts. It is worth noting that in all cases I have seen the disease never began on any covered part of the body; the face is, of course, the most common site, but the scalp and the ears are not infrequently the first to be affected. Apart from the head and face, the fingers are the only parts where it has started, and here only as the lupus pernio. As regards the distribution, when first seen 71, that is, 50 per cent., affected both cheeks, and mostly the nose as well; in only about half of these was the disease so symmetrical as to produce the characteristic "butterfly patch." In the others one side was distinctly more affected than the other. In 24 cases the nose and one cheek only were affected, and in 9 the nose alone. In 4 cases there was only a single patch on one cheek. In 5 it affected the nose and ears. Adding these figures, we have 113 cases out of 142—that is, 79.5 per cent., in which some part of the middle third of the face was involved.

The ears were affected in 45 cases—in 27 both ears, in 9 the right, and in 9 the left only; in 2 cases the disease was entirely confined to the ears, in 5 to the ears and nose, in 2 to the ears and scalp, in 1 to the ears, scalp, and forehead. In the asymmetrical cases there is no appreciable difference between the right and left sides.

The scalp was affected in 43 cases; in 9 of these the lesions were entirely confined to the scalp, though very extensive in 3 of these. Cases of lupus erythematosus confined to the scalp seem to be not infrequently missed in private practice when they are still small and the hair fairly thick. In 11 cases the eyelids were affected, in 5 both, in 3 the right and 3 the left, in 1 the left eyelid was the only affected part. The forehead was affected in 13 cases; in 2 of these the forehead alone was involved. The chin was affected in 4 cases, and the mouth and mucous membrane of the lips in 2. I have also had 2 cases in private practice in which the lips and mucous membranes were affected.

Lesions on the rest of the body are rare; the hands and fingers were affected in 9 cases, the chest in 2, the neck in 4, the arms in 2, while 4 cases developed an acute disseminated eruption with high temperature and symptoms of septic intoxication; one of these died and another recovered from two successive attacks at an interval of two years.

Apart from these hospital cases, I have seen 3 other cases of acute disseminated lupus erythematosus, 2 of which were fatal; 1 case of lupus erythematosus affecting the ears and fingers for several years, beginning as a lupus pernio, died from thrombosis of the iliac vessels, first the right and afterwards the left, with extension upwards.

Of the 3 deaths from acute disseminated lupus erythematosus I was able to obtain a *post-mortem* examination in 2; 1 showed tuberculous ulcerations of the intestines, the other ulcerations of the small intestine, extensive in area, but not tuberculous; in addition, there was noted a recent acute extension of an old tuberculous focus in the lung. The examinations were made by the pathologist of the Manchester Royal Infirmary.

I propose to summarize briefly the conclusion I have provisionally formed from the study of these cases, and in doing so I am fully convinced that at the present time we can only come to provisional conclusions; much more information is needed before we can hope to solve the mystery of what is, I think, one of the most interesting forms of disease.

To take briefly the headings under which this discussion is defined: (1) *The nature* of the disease: I agree entirely with Dr. MacLeod that it is not a definite entity, but a process resulting in destruction of the proper tissues and their replacement by scar tissue; practically what in other organs we should call a cirrhosis—that is, an interstitial inflammation more or less chronic, ending in cicatrization. (2) *Causes and varieties*: We must, I think, separate the acute disseminated form from the others, and in these cases alone can I accept the toxaemic hypothesis. Toxaemia must, to my mind, connote some general symptoms, and I cannot admit any general toxaemic condition as a factor in a disease which in over 97 per cent. of the cases remains a strictly local disease, and in a considerable proportion of these an asymmetrical local disease for periods extending up to twenty or more years. Moreover, are we any nearer to a solution of the problem by assuming an unknown toxic substance as the cause of the disease? I think it is better to admit that the cause is unknown in the majority of cases, but that it is a local cause, and one which acts upon exposed parts of the body, whether it be by microbic, chemical, or physical irritation. Some cases—and especially those in younger patients—I believe to be due to tuberculous infection, and look upon them as representing the maximum of protective reaction on the part of the tissues; we find in the lungs, for example, cases of fibroid phthisis which were long believed to be non-tuberculous, and I consider that in this group of cases of lupus erythematosus a local infection is completely cured by interstitial reaction even before the typical architecture of a tubercle is formed. In favour of this view is the fact that in my cases of lupus erythematosus under 25, a large proportion showed tuberculous lesions in glands or scars of former abscesses, and were frequently members of tuberculous families. In the patients where the disease began after 25 the proportion with tuberculous lesions or history was much smaller. Another point I should like to mention in this connexion is that in two of these youthful cases of lupus erythematosus which I have had the opportunity of watching at intervals for several years, the nodules of lupus vulgaris have appeared, and the whole clinical picture become one of lupus vulgaris. The second variety is that which is especially associated with chronic venous and capillary congestion, and this includes the venous congestion and lividity of chilblains, and also the slight forms of Raynaud's disease, on both of which conditions lupus erythematosus may develop. These patients are, I think, usually weakly in other ways, or overworked and often overstrained. The third variety is the one specially associated with the overaction and plugging of the sebaceous glands, the lesions are usually thick and well defined; seborrhoeic lesions are usually found in association with this form, and the patients are often very healthy and strong. Finally, we have the acute disseminated form, which is, I admit, a toxaemia, possibly due to absorption from any septic focus, possibly a tuberculous focus in some cases; and the lesion may be as widely spread and symmetrical as an exanthem or a drug rash, all of which I should class as true toxaemias.

As regards treatment, we should admit that the disease is only curable when seen, as it rarely is, in the very early stages. If once cicatrization has taken place we cannot restore the lost tissues, and a scar must remain. Unfortunately we often have to wait for atrophy to take place before making a definite diagnosis of lupus erythematosus. This being the case, I think our first point is not to cause a worse scar by overactive treatment than the disease itself will produce if not treated at all. In all early cases soothing and astringent lotions are the best, combined with mild antiseptics, such as modifications of Bulkeley's lotion. Ointments are, in my experience, more likely to do harm than good except in the sebaceous cases, and where the skin is often greasy. In more advanced cases I have extensively tried all the methods available, and find that judicious scarification, liquefied carbolic acid, light applications of carbonic acid snow, and, where the lesion is small enough, radium sittings give better results than stronger caustics, *x* rays, or Finsen light and its modifications. I have seen several cases where an acute extension has rapidly occurred after strong ointments, carbonic acid snow, and other irritant applications.

Internally I know of no specific, but treat the general health without regard to the local disease. I think an acid and quinine or cinchona mixture is often useful, but it is also frequently useless; the same applies to salicin, arsenic, ichthyol, and ergot. In the acute disseminated cases I think I have found distinct benefit from the red iodide of mercury, $\frac{1}{80}$ to $\frac{1}{40}$ of a grain dissolved in water with 3 to 5 grains potassium iodide, and given every four hours; certainly the cases in which I have given this have recovered, whereas the earlier cases died, but the numbers are too few to draw any conclusions except that it is worthy of a trial in a possibly fatal condition where we know no better treatment.

Dr. R. A. BOLAM (Newcastle-on-Tyne) said the matter of causation still remained the most interesting question. On investigating the figures of his clinic he found there were cases aggregating roughly 30 per cent. which were clinically suspicious of tuberculosis. It was not often possible to prove the suspicion, but the statement was made for what it was worth. The multiplicity of causes would be conceded by most observers. Next in frequency to tuberculous, rheumatic or rheumatoid cases provided the greatest number of instances of the disease. Exposure as a factor had been emphasized by Sir Malcolm Morris, and in this relationship it was interesting to note that experience in the North of England showed roughly three times greater incidence that in the statistics of Crocker. They must all be impressed by the factor of health degradation in the causation. Those affected were often people who had suffered privation and mental stress. In regard to treatment he was in accord with the opener of the discussion, and would only remark that the diversity of results of treatment with CO_2 snow arose in part from lack of preparation of the surface of the only lesions suitable for this remedy—that is, the circumscribed seborrhoeic type. But treatment on general lines, fresh air, super-

alimentation, rest, and relief from mental anxiety still provided the most satisfactory means of combating the disease.

Dr. WINKELRIED WILLIAMS (Brighton) spoke of the tendency of lupus erythematosus to graft itself on pre-existing disease, especially diseases to which the term "seborrhoeic" was applied. He referred to cases of seborrhoeic dermatitis in which it followed, as syphilides sometimes did, in the wake of the seborrhoeic affection; and to cases of rosacea which at first were unmistakably rosacea and later on equally unmistakable lupus erythematosus, and added that he thought such cases should be a warning against the early use of strong local remedies in cases of rosacea. He considered the toxin as most frequently alimentary, and that there was a possible danger in attempting to get rid of this by powerful hydrogogue purges—that is, of suddenly liberating a large quantity of toxins fixed in hard faecal masses—and described a case in which a severe case of lupus erythematosus was suddenly made into the grave "*d'emblée*" type by such treatment; in fact it was like the reaction of lupus vulgaris to a strong dose of tuberculin.

Dr. HALDIN DAVIS said: We are all agreed that lupus erythematosus is one of the most mysterious of all the common lesions of the skin, and it cannot yet be said that we understand it at all completely. It is highly probable that this mystery will continue until a scientific diagnosis is found for the disease. At the moment we are driven to take refuge in the blessed word "toxaemia," a word which is really a confession of ignorance. I quite agree with Dr. MacLeod on the etiology of the disease. Driven as we are to diagnose it on purely clinical considerations, we class under one head almost all cases of persistent erythema which lack induration. I feel convinced that, as our knowledge of the causes of disease advances, we shall be able to separate off from one another some of the types which are now all classed together as chronic forms of the eruption. There are certainly two distinct varieties which are very distinct clinically, and which bear scarcely any resemblance to one another. One of these is the very superficial isolated patch in which the border is not very sharply outlined, and which is found upon the cheek or on the side of the nose in the female out-patient; the other is a much rarer form, of which I have only seen two well-marked cases, in which the lobules of both ears and the adjoining area of the cheeks were quite symmetrically affected. The lesion had a distinctly raised and almost infiltrated edge, while the central parts of the patches were rough, with very adherent scales. The infiltration of the edge naturally suggested a syphilide, but in both cases the Wassermann reaction was negative. Apart from the immediate neighbourhood of the ears, the face was quite free from any other manifestation. The only points in which this rare form agreed with the commoner superficial form were in the presence of scales and in the fact that scarring gradually appeared in the central portions of the lesion. One of my cases was in a middle-aged woman, and the other in a middle-aged man. The woman has been as yet the more fortunate, because she had an attack of erysipelas of the face, and this was followed by an almost complete disappearance of the lupus erythematosus—a good example of the *vis medicatrix naturae*. The man is still under treatment, of which the principal factor is a salicylic acid ointment, in order to remove the scales. Gradual scarring of the lesion is taking place. The prognosis in lupus erythematosus is always interesting and difficult. I am inclined to think that in the more acute cases, where large areas are almost simultaneously affected and where there is little scaling, the prognosis is better than in the more insidious varieties. Certainly in 2 cases I have seen the lesions disappear within a few months under the influence of quinine and salicin and rest in bed as far as possible. Of the more chronic cases I am inclined to think that one is often too pessimistic about the prognosis. Only a small minority of the patients exhibit the typical extensive and classical butterfly appearance, and a single well-defined patch will often remain stationary, even if it does not disappear, for many years. On the other hand, I have notes of at least 4 cases in which chronic patches have been quite cured within a few months, whether thanks to the treatment they have received, or for some other reason, I know not. The evidence that they were really lupus erythematosus and not something else is that they have left a certain amount of the pale atrophic scarring which is accepted as typical. One of these cases was in a little girl of 9 years of age which is the youngest case of this disease that I have met with. Even in the typical and well-marked cases of the butterfly type the prognosis is by no means hopeless. One case in particular I remember, a soldier who had been invalided out of the army and disallowed a pension on account of bad lupus erythematosus which had been considered syphilitic, no doubt on account of the fact that the scarring produced was much deeper than is usual. He gave a negative Wassermann reaction, and after a few treatments with zinc ionization all the erythema disappeared leaving the scarring alone. Some mysterious change must have taken place because not only did the patches treated improve but also all the other lesions. It is interesting to note that we succeeded in convincing a Medical Board appointed by the War Office that this man did suffer from lupus erythematosus and not syphilis, for they ultimately awarded him a pension of a shilling a day. In treating these very chronic cases we have lately been using at St. Bartholomew's the method recommended by Sabouraud in his clinical lectures, of multiple puncture with the galvanic cautery. Under the influence of this treatment a man who has had the disease for many years and who has, it seems, tried all the hospitals, both general and special, of the metropolis, now shows very marked signs of improvement. This method of multiple galvano-puncture, which is well known in France, certainly deserves more attention than it has received in this country.

Dr. GEORGE PERNET (London) considered the acute case brought forward by Dr. W. Williams came into the category of the acute lupus erythematosus d'emblée which the speaker had described. The swelling of the face was certainly like the so-called erysipelas perstans of Kaposi. Dr. Pernet was of opinion that what they labelled lupus erythematosus was not tuberculous in a direct sense. He insisted that tuberculosis might be one of the etiological factors. In the majority of cases there was a family history of phthisis. Chilblains, again, so often present in these cases, was also in favour of this view. Brocq in France was rather inclined to take the English view of the non-tuberculous origin of lupus erythematosus. The teeth and the condition of the mouth were of great importance in the etiology. The name was a wide label including a number of varieties. The factors at work were various, in his opinion, and might lead to a variety of clinical cutaneous manifestations. A syphilide might be mistaken for lupus erythematosus, and vice versa. In his thesis on acute lupus erythematosus d'emblée Dr. Pernet had gone into the differential diagnosis of this condition and erythema multiforme. There was a rare form of the condition known as "psoriasiform lupus erythematosus" resembling in some ways a mixed psoriasis and lupus erythematosus, but the psoriasiform elements presented points of difference as compared with true psoriasis. As to treatment' Dr. Pernet, following in Dr. Radcliffe Crocker's footsteps, had obtained very good results in some varieties with salicin and quinine, which latter was very useful, especially in the acute *d'emblée* cases. Locally, phenol, ionization, and CO_2 snow were valuable. Dr. Pernet was eclectic in their use.

Dr. ALFRED EDDOWES (London) said the serious extent and depth of the pathological changes had not been realized by dermatologists owing to their custom of taking sections too superficially for microscopic examinations. By excision deeply for microscopic investigation he had not only learnt much, but unexpectedly cured large nodules. Moreover, he had seen a lesion which had been accidentally crushed cause great swelling and pain, as if a poison had been set free, and finally clear up rapidly without scarring. He believed the primary lesion was essentially deep, like a nodular gumma, and that the damaged area finally produced discoid lesions, just as serpiginous dermato-syphilide succeeded to oedema and the deep gumma. He therefore strongly advocated the puncture, disinfection, and drainage of all nodules

discovered; and he practised the plan of puncturing each nodule to its base by means of a lancet, at an angle of 45 degrees, in order to prevent or minimize scarring. He had had encouraging results from the application of radium, but had not arrived at any definite conclusions as to dosage. He did not believe in any one drug, but in the treatment of ill health on general principles.

Dr. SEMON (London) was unable to agree that the case against a tuberculous etiology was in any way proven. He desired to call his hearers' attention to the very important paper just published in the current number (July) of *Archiv für Dermatologie und Syphilis*, by Bloch and Fuchs. These investigators had succeeded in producing tuberculosis in guinea-pigs by inoculating pieces of fresh lupus erythematosus eruptions (from 4 cases) into the peritoneal cavity. More recently they had proved that these lesions contained tuberculous toxins. Their method was to cut up and triturate in a sterile mortar pieces of freshly excised lupus erythematosus lesions with 8 to 10 c.cm. of water. After evaporating this to 0.5 c.cm. an opalescent yellowish fluid remained, one drop of which was sufficient to produce tuberculoid papular lesions when injected into tuberculo-susceptible patients. Further, these lesions reacted locally on subsequent tuberculin injections as minimal as $\frac{1}{10000}$ mg., thus supporting their tuberculous nature. Gougerot of Paris had also succeeded before these investigators in producing tuberculosis in guinea-pigs from typical scalp lesions (microscopically examined) of lupus erythematosus. Although there might be various etiological possibilities and probabilities in the production of these lesions, the tubercle bacillus had been adequately proved to play an important productive part in some at least of them.

Dr. G. NORMAN MEACHEN (London) put in a plea for the discontinuance of the term "lupus" erythematosus by dermatologists. It was much better to employ Unna's synonym of "ulerythema," which was an excellent pathological name with the great advantage of not frightening the patient. With regard to the application of carbolic acid mentioned by several speakers, he thought that better results were obtained by mixing anhydrous phenol with powdered camphor. This mixture, known as "pheno-camph.," did not whiten the skin, and it was less painful than ordinary carbolic acid.

Dr. FRANK N. BARENDT (Liverpool) regarded the term "lupus erythematosus" used by observers to include more than one type of disease. The history of the phrase showed this. Where the ulcerative process was the prominent feature, the tuberculous nature of the process impressed itself. Again, where vascular disturbance—angiospasm—in its various phases was present the erythematous idea became predominant. It was probable this condition rendered the tissues more susceptible to the insemination of the tubercle bacilli, and thus one got a composite clinical picture. With respect to treatment in all cases, a fortifying regimen was indicated. Where more active local treatment was required he used electrolysis with a negative needle, and zinc ions in the form of a zinc needle attached to the positive electrode. But in all cases the aphorism of "*Surtout ne pas nuire*" should be borne in mind.

The PRESIDENT remarked that in a rather prolonged study of this disease he had found the difficulty of determining its cause an increasing one. He could not help thinking that there was one underlying cause of lupus erythematosus, doubtless acting in conjunction with many other factors. The one point he would like to insist on was that one occasionally met with cases in which there had been a long-standing chronic patch or patches of the discoid type, and on which suddenly an acute outbreak of the erythematous type had occurred, and these formed a bridge between the definite discoid and the distinct erythematous types. He had been much interested in Dr. Winkelried Williams's acute case, apparently of intestinal origin, for he had had a case of this type which was ultimately fatal in a young previously healthy girl. She had extraordinary pyretic attacks (temperature 103–104°) following the administration of aperients. There were offensive motions, but the bacteriologists were unable to give him any assistance.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ANGINA PECTORIS AND CHLOROFORM.

IN the course of the last few weeks two deaths from angina pectoris have received comment in the public press, and in both cases chloroform appears to have been employed in the alleviation of pain during the seizure. I do not know anything about these particular cases, and therefore my remarks upon the administration of this drug are not intended to apply to them, but I wish to call attention to the fact that there is a class of cases of angina pectoris in which the administration of chloroform is attended by considerable risk.

An opinion is prevalent in the profession that during the anginal seizure the arteries are in a state of vaso-constriction, that peripheral resistance is increased and blood pressure is raised, consequently that the employment of a drug which causes rapid vaso-dilatation in the splanchnic region is indicated. This opinion receives apparent confirmation from the action of nitro-glycerine in alleviating pain in the anginal seizure, but it must be remembered that nitro-glycerine relieves spasm in involuntary muscle in whatsoever organ or part it is situated, and no proof whatsoever exists that the relief which this drug affords in angina pectoris is obtained through reduction of arterial spasm.

The prevailing opinion—namely, that the visceral circulation is impeded by vaso-constriction during the anginal seizure, and therefore that the heart is under strain from increased peripheral resistance—finds no sanction from the results of modern methods of examination. In fact, evidence points in the opposite direction.

A series of blood-pressure readings taken by me during the seizure show, in many instances, neither an elevation nor decline. In a few cases I have found blood pressure raised, but in these the elevation was not high, nor were the attacks severe. On several occasions I have found blood pressure lowered, falling 20 to 30 mm. Hg below the standard regarded as normal in the individual case.

To the last class of cases I now wish to draw particular attention. A fall in blood pressure such as this must mean vaso-dilated splanchnic vessels. The clinical aspects of the cases support this view. Persons so affected appear to be in a state of shock; the pulse is stringy and soft, hard or compressible, frequent or slow. The venous system, so far as surface veins indicate its state, is drained of blood. Veins on the dorsum of the hands lie in furrows at a plane beneath the surface. The arterial system is in no better state. The skin is pallid, cold, and covered with sweat. From the shortage of blood in peripheral veins and arteries, it may be affirmed that the main volume of the stream is lying inert in splanchnic lacunae.

In cases belonging to this class pain appears in its severest type, and in these cases internal remedies fail on account of lack of absorptive power on the part of the gastric wall. Hence the inducement is strong to seek a remedy which may be administered through inhalation. But in the case of subjects belonging to this class, administration of chloroform is attended by considerable danger.

London, S.W. H. WALTER VERDON.

AN international meeting on thalassotherapy will be held at Cannes in April, 1914, under the honorary presidency of His Serene Highness the Prince of Monaco. The actual president will be Professor d'Arsonval and the vice-president Dr. Faisans, physician to the Beaujon Hospital, Paris. The proceedings will have reference exclusively to the study of marine heliotherapy. The following is the programme of reports and discussions: The nature of solar radiations at sea level and the means of measuring them; actinometry and climatology in their relations with marine heliotherapy; physiological action of marine heliotherapy on nutrition; dosage of marine heliotherapy; marine heliotherapy in surgical and cutaneous tuberculosis, in pleuro-pulmonary tuberculosis, and tuberculous disease of the mediastinal glands, in abdominal tuberculosis and in non-tuberculous affections. Full information as to the organization of the meeting will be published later by the committee responsible for the arrangements.