intravenous injection of insulin to depancreatized dogs. The same individual animal on repeated tests gave very constant results, though there was considerable variation between different animals. Work on the completely depancreatized patient needed very careful scrutiny because the digestion had been altered; the digestion of food was not the same after removal of the pancreas. What one would like to see was a comparison between the normal person and the depancreatized patient who nevertheless was absorbing the same amount as the normal, was of the same weight, and so forth.

It was well known that other glands interfered greatly with the action of insulin, and if some of these glands were taken out the animal was much more sensitive to the substance. After removal of the adrenals the sensitivity was increased by about five times. It would be an interesting piece of research to take out the pituitary and both adrenals and at the same time make the animal diabetic, but that was a great test of technique. He thought they were nearly at the point at which they could pick up the insulin content of the blood. In these and other investigations much more could be done if finer methods of estimation were available, and it would be possible then to use the terms hyper- and hypo-insulinaemia with considerable confidence.

Effect on Enzymes

Prof. Best went on to say that it was not his intention to deal with the present state of knowledge of the multiple effects of insulin. A good case could be made for a fall in blood phosphates, in blood potassium, and in ketone bodies in the blood. Work had been done on hexokinase by the Coris showing that the inhibition exerted by the pituitary and the adrenals was always relieved by the addition of insulin. Another enzyme system recently shown by Cori to be affected by insulin was phosphorylase. It was interesting that the factor which caused the initial hyperglycaemia caused breakdown of liver glycogen. The hypoglycaemic factor of insulin could be completely destroyed by mild alkalis, but the part that remained after the anti-diabetic factor of insulin was destroyed caused a rapid short-lived hyperglycaemia in certain animals and also a breakdown of glycogen, that is, the reverse of the effect of active insulin.

He had little to say on the use of isotopes in carbohydrate metabolism. They had been limited by the scarcity of isotopes, but they had plenty of radio-active phosphorus. With the help of a new mass spectrograph in his department they were hoping to study certain problems of carbohydrate breakdown.

Finally he turned to a more general subject and gave a brief review of the work of De Witt Stetten and his colleagues. It illustrated better than most other findings the importance of labelled molecules in the study of carbohydrate metabolism. Under normal conditions there was a fairly constant composition of tissue, but this was not due to the lethargy of the molecules in the tissue, it was due to the fact that there was a steady interplay, an active interchange in and out. By using certain procedures Stetten and his colleagues calculated the amount of glycogen synthesized each day under certain conditions in rats. The amount was about 0.44 g. each day, the rat eating about 15 g. of carbohydrates, or about thirty times as much as would be required for the synthesis of this quantity of glycogen. Ten times as much of the glucose eaten was turned into fat as was turned into glycogen. The suggestion was made that lipogenesis was inhibited in the diabetic, as a result of which an appreciable amount of glucosuria might be expected unless the defect were compensated by other mechanism. The total fat synthesized in the diabetic rat was only about one-twentieth of that in the normal animal. The amount of glucose which appeared in the urine of the rat corresponded fairly closely with the amount the animal failed to utilize for fat synthesis. In this way it was possible to study the urinary glucose of the animal and to fractionate it and determine at any one time how much of the glucose came from the carbohydrate of the diet and how much from gluconeogenesis.

All these new studies supported the view that glucose was not formed from fatty acids under any conditions with which we were familiar. Some of the conclusions at which Stetten had arrived and which had been confirmed by others bore out the older findings and at the same time opened up a number of new problems. It was obvious that clinicians and physiologists must work very hard to keep abreast of the rapid advances of knowledge of carbohydrate metabolism which the modern techniques were making possible.

FUTURE HOSPITAL ADMINISTRATION

SIR ARTHUR RUCKER'S ADDRESS

The Institute of Hospital Administrators held its annual conference at Brighton on April 19, the Chairman of the Council, Mr. B. Lees Read, presiding over the earlier part of the proceedings, and the president, Mr. Charles G. Rolliston, over the later.

Sir Arthur Rucker, addressing the meeting on "Hospital Administration in the New Health Service," said that the last idea the Ministry of Health had was that they were going to administer the hospitals. "We want you to tell us how the hospitals have got to be administered. There are others who must join with you in telling us, but the professions concerned must tell us how the hospitals must be administered. Our job is to build up the background of administration by which you can do your job." The chief difficulty they had had to resolve in the framing of that part of the Act was how to "marry" two somewhat contradictory ideas. They wished to make sure that the professional people who had to make the scheme work would have the fullest opportunity of taking their part in the framing of the policy of the Service, and in running and administering it. Against that they had to be careful not to frame a service that would be pure syndicalism. In this country they did not look with favour upon the idea that the people who were employed in a particular service should also be its managers.

In the Schedule that dealt with the Central Health Services Council there was a provision for the inclusion in the Council of five representatives of hospital management. It was fairly obvious that the experience of the Institute would have to be included in that representation. In addition to that it might or might not prove desirable to have a standing advisory committee on hospital services.

In trying to frame these services there was another problem that had had to be resolved. That was the old problem of "centralization or decentralization." In the new health service insurance contributions and, to a far larger extent, the taxpayers' money would have to be brought in. That being so, the old saying about the "piper" and the "tune" must operate to some extent. The duty of providing the money for these services could not be put on to the Exchequer without placing the responsibility for the services upon someone directly answerable to Parliament. That was why, ultimately, the Minister must be responsible for these services, because he, and he alone, could be answerable to Parliament. That did not mean that the actual operation, administration, and management of the services needed necessarily to be concentrated in Whitehall. They had sought to do it in the hospital service by setting up Regional Boards, with management committees under them to whom the maximum degree of responsibility would be directed.

There was one point of real difficulty which ought to be stressed. That was the relationship between the local authority services and the hospital services. Under the Act all institutional provision for maternity would be the responsibility of the hospital services. The provision of a midwife and medical care for a woman being confined in her own home would be the responsibility of the local authority. That might well lead to difficulties. Suppose a woman proposed to be confined in her own home and made arrangements with the local authority for a midwife to attend her, and then, towards the end of her pregnancy, or worse still after parturition had started, something went wrong and she required admittance to a maternity hospital. She then had to pass from the care of the local authority to the care of another authority. That was untidy, but it had been put into the Act because the only alternative had been to take over the entire local authority services, and that, the Government thought, would have been neither practicable nor desirable.

Under the Act all the local authority services were to be the responsibility of the counties and county boroughs. Functions relating to child welfare were delegated to the divisional executives and the excepted areas which were set up under the Education Act. That had been done because it had been thought that child welfare should accompany the care of children in the educational field, but an interesting point had arisen. Lancashire, for example, were working out a scheme at the moment which was not dissimilar to the arrangements for London, under which the county council would like to set up committees throughout the county area for the administration of all the local authority health services, keeping them all together. They would then co-opt representatives of the minor authorities on to these committees. That differed a little from the scheme contemplated in the Act in that it covered all the local authority services, not only child welfare. The administration would be by committees of the county council, on to which members of the local authorities would be co-opted, instead of by delegation to divisional executives and the excepted areas under the Education Act. It would mean bringing all the health services under local authorities in the counties into administrative areas which would correspond broadly with the groupings of hospitals in the hospital service, and there might be some advantage in that.

Hospital Services

Already they had made a start. The areas of the Regional Boards had been defined and had been approved by Parliament. They hoped to constitute the Regional Boards in a very short time, and nearly all the chairmen who had been invited had already accepted their appointments. The Minister was considering the recommendations for the appointments of members of the Boards, and it was hoped that the Boards would be in being shortly. The Minister must retain the ultimate financial control; nevertheless, he would delegate to the Regional Boards the responsibility for the planning of the hospital services in their area. Just as it was no part of the Minister's function to try to manage hospitals, so also it was no part of the job of the Regional Boards to manage the hospitals. Their job was to arrange the pattern of the hospital services in their region, and to survey their area and see whether the services were adequate.

The first job of the Regional Boards would be to group their hospitals into a sensible pattern and to appoint management committees for each group. Most hospitals, perhaps every hospital, would require a local house committee to look after the details of organization. That was the chain: the Minister, the Boards, the management committees, and the house committees. The new feature of importance was this grouping of hospitals under the management committees. In the past, hospitals in many areas had been too much isolated units, and had been almost in competition with other hospitals in the area.

As always, there was the other danger that if the management group was too big the local interest might be lost. They wanted to keep local patriotism—the feeling that it was "their own hospital"—but was there any reason why they should not get the feeling that it was their own *group* of hospitals?

In some ways the Regional Board would be a body not unlike the local authority, except of course that it was not elected by the local electors. It would be a body of experts and common-sense people whose job would be to give general decisions on policy and so on. They would need a competent, and he feared a substantial, staff. At that level the planning of the services was largely a medical affair, and they looked to the chief medical officer of the Regional Board for that. They did not want to have a doctor over a layman, or vice versa; they must work together; but they did think the doctor's the most important post. When they came to the management committee, which would deal with the day-to-day management of the hospitals, seeing that the hospitals were economically run and providing all the services needed, they must not be too dogmatic. It was primarily a layman's job, but doctor and layman must work together. The areas were not rigid in any sense. It was not the intention that anyone who fell sick in one Region should be required to go into a hospital in that Region. Still less should each management committee have a rigid area for which it was responsible. Any patient would be free to go to any hospital anywhere.

The success with which they achieved that idea of an ultimate control at the centre with a genuine decentralization of administration would depend largely upon finance. An annual budget would be fixed for each Regional Board. Within that budget the Regional Board would be free to manage its own affairs, subject only to the approval of any unusual expenditure which was outside the budget. Similarly, each Regional Board would approve the budget of the management committees within its region. But, the scale of expenditure having been determined, the management committees and the Regional Boards would then run their own affairs at their respective levels. There were other provisions by which they were to have their own money: the carry-over of endowments. In the case of the teaching hospitals that money would be their present endowments. In the case of the management committees it would be their share of a general pooling of all present endowments.

Central Purchase of Supplies

Considering the question of supply, he said that their conception at the Ministry was that in due course it might be necessary to purchase centrally on a fairly substantial scale. Here again there was this question of balance. The last thing they wanted was a too rigid standardization of supplies, and they must carefully balance the advantages that could be obtained from sensible central purchase with the dangers of over-standardization. They would have to set up a central supply department at the Ministry, but at the outset of the new Service the existing supply arrangements should, so far as is possible, run on. In the meantime all they would do centrally was to look at the fields of shortages, and, where shortages existed, place central orders. Some were now being placed.

The teaching hospitals would remain outside the purview of the Regional Boards, and be managed by their own boards of governors, who would be responsible for providing the hospital facilities required by the medical schools for undergraduate teaching. A hospital taking part in postgraduate teaching would not necessarily be regarded as a teaching hospital. So far as the Board of Control was concerned with the administration of mental hospitals, that administration would go over to the Ministry of Health. The Board would, however, remain in being as the body responsible for questions relating to the liberty of the subject. That step would be taken quite soon, and circulars would be sent out suggesting the steps to be taken to bring the mental hospitals into the whole picture. It would often be impossible to bring the mental hospitals into the same management committees as the other hospitals. The mere size of mental hospitals was often such that it would not be possible, but the link between the general hospital and the mental hospital would be widely developed and encouraged, even when an actual merging in a single management committee was impracticable.

The Regional Boards would take the very big responsibility of ensuring the proper distribution of specialists. A vacancy in a hospital would be advertised, and there would be applications from various consultants to take that post. The local management committee would then sit with the Regional Board to appoint a selection committee to recommend suitable candidates.

What was the hospital problem to-day? In this country there were about 130,000 beds in general hospitals, 11,000 maternity beds, about 40,000 beds in isolation hospitals, and about 60,000 for chronic cases. In the mental hospitals there were something like 127,000 beds, and altogether they had a grand total of about 400,000 beds. They had not very accurate figures, but nearly 40,000 beds in general hospitals were closed, mainly due to lack of staff. They had rather more accurate figures of the mental hospitals, where there were some 16,000 beds which could be in use but were not. Of these, 11,000 were at present being used for other purposes; about 2,000, which had been diverted during the war, they were trying to get restored, and about 3,000 were closed because they could not be staffed.

They were not going to have a proper hospital service until they could solve the staffing and building problems. The

nursing part of the staffing problem was the most acute, and there were signs that the domestic staffing problem, which had been very acute, was improving. There was not much improvement in the nursing problem. They had had a working party sitting on that problem, and it had produced an exceedingly interesting, perhaps provocative, report. It would be published soon. They had promised not to give effect to that report until they had obtained the views of all who knew the subject, but, that being done, they would get something of value for the long-term solution. He was not sure it would help much in the short-term. Emphasis was likely to be placed on the importance of making sure that student nurses really were students, thereby helping to overcome what was a main cause of shortage—the wastage of nurses. They were getting enough young women, and men too, coming into the profession, or nearly enough, but the trouble was that they did not stay. They were also setting up a similar working party on the allied problem of midwifery.

Building was a very big problem. The Ministry had tried to get all they could for the hospitals against the competition of housing, factories, and all the other sorts of building, and they had not been doing too badly. They had had priorities amounting to about £4,000,000 a year for hospital affairs, but, of course, the amount that ought to be spent on hospitals in this country was astronomical.

Sir Arthur Rucker concluded by referring to the deep interest overseas in what they were doing. They had the most magnificent opportunity that had ever been given to public health administrators. Let them trust each other and work together for a good service.

Replies to Questions

A discussion then followed, and in reply Sir Arthur Rucker said that the boundary-line difficulties had been magnified in the past because there had often been two authorities who were watching that boundary line very jealously. There could not be the same jealousy between a national service and a local service. Answering another question on who sacked the staff, he said that technically the hospital staffs would be the employees of the Regional Board, but, with the exception of the specialist staffs, the Regional Board would delegate the appointments and dismissals to the management committees. In any service of this kind there could only be satisfactory administration if there was joint administration by administrator and by doctor. Of course matrons and all the other services must have their part.

He had been asked about the working-men governors. At the moment there were all sorts of bodies taking an interest in hospitals—societies with contributory schemes, and so on. But clearly that could not go on in the same way; it would not be reasonable to expect the people to contribute when they had to pay a national contribution. There might well be a great deal in the principle, though in different ways, of having local friends of the hospitals. There would be opportunities for them to bring to the hospitals the voluntary services which would be needed still.

He was not convinced that one should think of hospital administrators as a completely separate class of the community, to be trained or selected for that purpose and that service only. Administration was not a science, it was an art. With regard to the point about mental hospitals it was important to "marry" the mental service with the general hospital service. The development of mental wards and the interchange of consultants was something they wished to see in future.

Of postgraduate teaching he said that they had not contemplated that a hospital would be dealt with as a teaching hospital, and would be outside the purview of the Regional Board and have its own board of governors, merely on the grounds that it was a postgraduate teaching hospital. There were many opportunities for a teaching hospital and its medical school to be associated with other hospitals—for instance, in the Norfolk and Norwich Hospital there was a link with Cambridge University, and a number of the consultants at the Norfolk and Norwich were on the staff of the medical school at Cambridge. Such links would be welcomed.

Referring to the difficulty of dealing with old people who occupied accommodation in mental hospitals but who did not really require treatment, he said that the scheme would not really be complete until they reached the final stage of it—the rewriting of the Poor Law. That would be done in a Bill to be introduced in the next session of Parliament. In the case of convalescent homes every one had to be looked at in detail. They were only entitled to take over hospitals as defined in the Act, so that where a convalescent home was within the definition it would come under the scheme.

The health centres were not going to be hospitals but common surgeries at which general practice would be conducted, with some diagnostic facilities, but they did not yet know about the precise arrangements. The link between the health centre and the hospital would be much the same as the link to-day between the practitioner and the hospital. He did not think there was anything in the scheme which would prevent a medical man moving from Region to Region. Probably there would be a tendency for consultants to serve hospitals in one Region, though they might move to another post elsewhere. The management committees would be concerned to see that they did not get some doctor "wished" upon them whom they did not want.

THE MIDWIFERY WORKING PARTY

Last April a Midwifery Working Party was set up by the Minister of Health and the Secretary of State for Scotland to inquire into the recruitment and training of midwives and especially to consider the reasons for and the manner of overcoming the present shortage. The Working Party, desiring to obtain a complete picture of the conditions in the profession, has drawn up a questionary which is being sent on Aug. 8 to all midwives throughout the country who in 1944 notified their intention to practise and also those who qualified in 1946. These years have been selected in order to give a random sample. The questionary is designed to find out if and why a woman gave up midwifery after training, the type of work she has been doing in midwifery, whether her practice is urban, rural, or mixed, what additional qualifications she may possess, and whether she needs a midwifery qualification for her present post. It ends with the leading question: "On the whole do you feel satisfied with midwifery? If not, why are you dissatisfied?" A letter which accompanies the form explains that the information is wanted for statistical purposes only, that the replies will be treated as confidential, and that the members of the Working Party will not themselves see the actual forms but only the tabulated statistics.

To find out the cause of the wastage of midwives after training is one of the principal objects of the inquiry, and therefore it is hoped that non-practising as well as practising midwives will return the forms. A pilot questionary which has already been circulated elicited 60% of replies, but the percentage of replies to the nation-wide circular must be higher than this if it is to be of real value. The statistical analysis will be undertaken by the Social Survey Office. A separate inquiry is being made of training schools to find out how many candidates take Part I only of the C.M.B. examination and the reasons for not proceeding to Part II. The Working Party, which appeals for any further evidence or suggestions, expects to present its report early next year—probably in March.

Since last autumn 26 shortened courses have been in operation to enable ex-Service men and women qualified as 1st class nursing orderlies to become State registered nurses in one year instead of by means of the usual three years' training. There will be vacancies for these courses next October, and applications from those suitably qualified should be made at once to the Secretary of the Ministry of Health, Whitehall, London, S.W.1. Only those with the rank of nursing orderly or nursing member class I, leading sick berth attendant, and L.A.C.W. or L.A.C. in the trade of nursing orderly who have had at least two years' ward experience under trained nurses are eligible. Men and women still in the Forces should apply through Service channels. Men are paid at the rate of 92s. a week with a deduction of 30s. for board and lodging, or 20s. in the case of married men with home responsibilities. Women receive £90 a year and free board and lodging or a living allowance of £80 if living at home. Examination fees are paid and free medical treatment is provided. Students may be accommodated at the training centre or live at home.