

JOURNAL OF THE NEW ZEALAND ASSOCIATION OF BACTERIOLOGISTS

EDITED, PRINTED AND PUBLISHED FOR THE ASSOCIATION

BY

DOUGLAS WHILLANS

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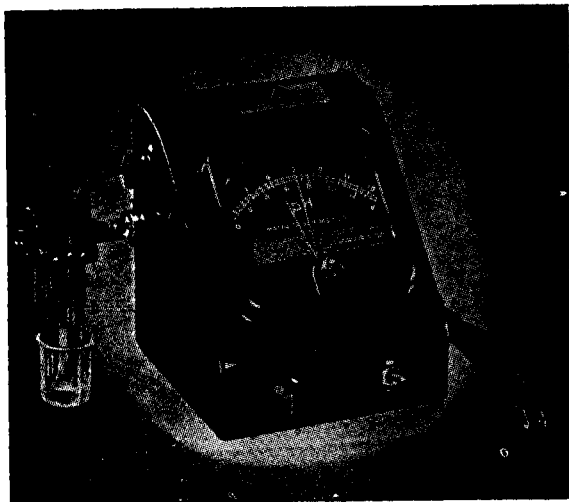
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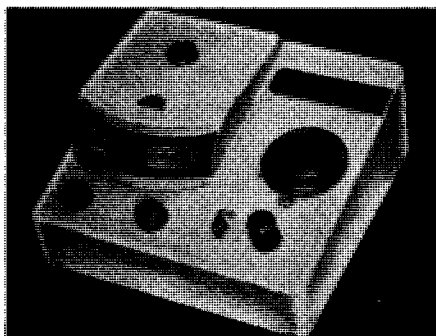
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B. C. G. VACCINATION.

T. H. Pullar.

(Pathologist, Palmerston North Hospital.)

It is important that hospital bacteriologists should know something of this subject. They are likely to be asked for information by medical practitioners and by the public; and also hospital laboratory workers come in contact with infectious tuberculous material in the course of their work, so that they have rightly been included in the groups accorded priority for protection by B.C.G., if Mantoux-negative.

Historical.

Only a very brief summary of the history of B.C.G. (*Bacille Calmette-Guérin*) can be given here. In 1906, Calmette and Guérin began subculturing a virulent bovine strain which had been isolated by Nocard from the tuberculous udder of a cow. For four years, sub-cultures on bile-containing media were made every four weeks. By 1910, the tubercle bacilli had become avirulent for laboratory animals. It was not until eleven years later, however, that B.C.G. was first administered to human subjects; Weil-Hallé, of Paris, gave 30 mg. of the vaccine by mouth to an infant whose mother was tuberculous. By 1924, 400 infants had been given the vaccine by mouth, but doubts as to its safety were aroused by the fact that some of the Pasteur Institute strains were capable of causing progressive tuberculous lesions in animals.

The Scandinavian countries soon became interested in the vaccine and it was first used in Sweden in 1926, and in Denmark in 1927. Various difficulties arose in the early stages; in Denmark it was given orally until 1930, when intradermal injection was commenced, but it was found that even 1/100 mg. intradermally produced abscesses and indolent ulcers. On the advice of the Pasteur Institute, where B.C.G. had first been discovered, the Danish workers changed to 1/1000 mg. subcutaneously; but even worse abscesses resulted! In 1931, a new and less viru-

lent stock culture was obtained from the Pasteur Institute, and it is this strain which has been used intradermally in Denmark ever since. In Sweden also, trouble had been experienced with abscesses on subcutaneous injection, and intradermal injection was found to be much more satisfactory.

Meanwhile (1929) the tragic "Lübeck disaster" occurred—271 infants were given an oral vaccine (allegedly B.C.G.) and 77 of these died of tuberculosis. It was proved by the subsequent inquiry that the fatalities had been due to accidental contamination of the vaccine with a strain of virulent tubercle bacilli, and those guilty of negligence were punished by imprisonment. This disaster was a severe set-back to the reputation of B.C.G., which has remained unpopular in Germany even to the present time.

B.C.G. has been used on a very wide scale in the Scandinavian countries since 1940, in spite of difficulties caused by the War, and its use has recently been made compulsory for hospital workers and others in Norway. A great revival of interest in B.C.G. has been shown all over the world during the last few years, but British authorities have been reluctant to advocate its widespread use, partly because of the difficulty of obtaining convincing statistical proof of its protective efficacy in human subjects.

Production of B. C. G. Vaccine.

I was fortunate enough to be able to see the technique of production of the Swedish vaccine by Dr. Wassén at Gothenburg, in 1947. The vaccine is produced in a small laboratory which is quite separate from the general bacteriological laboratory at the Sahlgrenska Hospital, though under the same roof. It is well recognised that B.C.G. vaccine should on no account be manufactured in a laboratory in which ordinary diagnostic work on tuberculous material is carried out. It is obvious that the culture media used for the B.C.G. strain are also capable of supporting the growth of virulent strains of *Mycobacterium tuberculosis*, and nobody would care to risk another disaster like that of Lübeck. It is perhaps unnecessary to point out that hospital bacteriologists who may be entrusted with the care of B.C.G. vaccine (even if only to keep it in the laboratory refrigerator) should be scrupulously careful that no accidental contamination or substitution can possibly occur.

Dr. Wassén maintains his stock cultures of B.C.G. on bile-potato, from which a 14-day growth is subcultured to glycerin-potato; after another fortnight a subculture is made from the latter medium to "Sauton I.," thence after 14 days more to "Sauton II." From this liquid medium the growth (not more than 11 days old) is harvested and made into a suitable dilute suspension for use as the vaccine. As a fresh batch of vaccine is prepared once a week, it is necessary to have several series of cultures at different stages. Growth occurs on the surface

of the Sauton media, and filamentous processes growing down from the under-surface of the "mat" of culture are apparently undesirable. It is interesting to note that Dr. Wassén has sometimes had trouble with B.C.G. cultures which show an unfortunate tendency to sink to the bottom of the flask of Sauton medium; this seems to occur only in the summer, and is thought to be due to the use of new potatoes in the preliminary slope-cultures. Dr. Wassén transfers a very heavy inoculum of growth in doing his sub-cultures, using a rigid platinum spatula with a long handle, instead of a wire loop. With this implement he can mash and spread the growth on the fresh potato-slope, or float it off on to the surface of the liquid medium. For transferring cultures from one Sauton flask to another, he uses a platinum wire which terminates in a large flat spiral. The flasks are plugged with cotton-wool covered by Kraft paper. A special gadget is used for squeezing most of the liquid out of the final mass of growth harvested for use as a vaccine; the compressed "cake" of culture is then ejected into a weighed sterile crucible. After weighing, the mass is then broken up with the sterile spatula, transferred to a large Roux type of flask, and ground by slow rotation with steel ball-bearings of a special type of stainless steel. The aim is to obtain a finely divided homogeneous suspension—if a granular suspension is obtained, the vaccine is likely to produce a more severe type of local reaction on intradermal injection. The Wassén technique is used by Dr. E. A. North, of the Commonwealth Serum Laboratories, for production of B.C.G. vaccine, so that the product now available for use in New Zealand is very similar to the Swedish vaccine. In Copenhagen, where the Danish B.C.G. vaccine is made at the State Serum Institute, all cultures of B.C.G. are grown only on Sauton medium. In Sweden there is a law which makes it compulsory for the cultures to be made by the original Calmette technique.

Characteristics of B. C. G.

The theory that B.C.G. is a "virus fixe" seems to have been disproved by the variations in virulence which may occur in this strain of *Mycobacterium*. Calmette maintained that the use of bile-potato was essential in order to keep the virulence low, but some of the more recent Scandinavian work has shown that the virulence can actually be enhanced by a few successive sub-cultures on bile-potato, when there has been gradual diminution after prolonged culture on Sauton medium alone. It has been claimed by some observers that the virulence of B.C.G. can be greatly increased by "passage" several times through guinea-pigs. The important thing in production of a potent vaccine is that growth of the cultures must be rapid. A few years ago the Norwegians experienced very disappointing results with their vaccine, the Mantoux-conversion rate being unduly low; this was

found to be due to slow growth of the cultures, so that the vaccine contained a large number of dead or degenerating bacilli.

Needless to say, B.C.G. vaccine is a living vaccine and must therefore be used shortly after its preparation—the C.S.L. product is given an “expiry date” ten days after the date of production, but sterility tests take four days. The vaccine should of course be kept in cold storage until it is used. Freeze-dried vaccines have been used successfully, with the addition of glucose or lactose, and it may be that this type of preserved B.C.G. will come into general use in the near future. Another obvious feature of B.C.G. vaccine is that no antiseptic can be added, as is the practice with killed vaccines; it is therefore essential that any unused vaccine left in a vial or ampoule must be discarded and not kept for use a day or two later.

Technique of Vaccination.

Several methods of administration of B.C.G. have been employed:—

(1) *Oral* vaccination has been almost completely abandoned, as the results are very variable and the method unreliable.

(2) *Scarification and multiple puncture* are really variants of the same method, in which the vaccine is spread on the surface of the skin and scratched or pricked into the skin with a sharp needle-point or multi-pointed instrument. The protagonists of this technique claim (with justification) that it is impossible to produce an abscess at the site of inoculation, and that no special skill is required. Unfortunately the results have been rather variable, as regards percentage of Mantoux-conversion, in the hands of different vaccinators; it seems obvious that there must be an element of chance in this technique, and the actual dose introduced into the skin is not known. The vaccine used for multi-puncture or scarification usually contains 10 mg. of bacillary culture per c.c.

(3) *Intradermal injection* is the method now favoured by most workers; it is the only technique used at present in Australia and New Zealand, as in Denmark and many other countries. It has the advantages of simplicity and accuracy of dosage, and no special apparatus is required, as the injection is made in exactly the same way as for a Mantoux test. Provided that the injection is truly intradermal, the risk of an abscess forming is negligible, but slight ulceration of the local papule is quite common. The strength of the vaccine used for intradermal injection is 0.5 mg. per c.c., so that the standard dose is 0.05 mg. in 0.1 c.c. It should be noted, incidentally, that the vaccine used for multiple puncture contains 20 times more bacilli than the vaccine for intradermal injection, so that there is a risk of mistakes occurring if the two strengths of vaccine are ordered at the same time. (The Commonwealth Serum Laboratories at present issue only the weaker vaccine, 0.5 mg. per c.c.) It is

evidence of the safety of B.C.G. that a few people have been accidentally given the strong vaccine by intradermal injection, with no worse results than a rather large ulcerating local lesion which takes months to heal.

Results of B. C. G. Vaccination.

(1) *Local reaction.* As already indicated, intradermal injection of the correct dose produces, in Mantoux-negative persons, a slowly-developing painless reddish or purplish papule, which in the majority of cases shows localised central ulceration in a few weeks and produces a small amount of intermittent purulent discharge, becoming covered by a small scab. The little ulcer heals rather slowly, and there is a dull-red mark visible for several months, but the resultant scar eventually becomes pale and inconspicuous. If a Mantoux-positive subject is vaccinated no harm results, but the local reaction is of the "Koch" type—a more acute inflammatory response which begins within two days of inoculation.

(2) *Complications* are almost unknown with careful technique and a reliable vaccine. Tuberculous abscesses, deep to the skin or even in the regional lymph-glands, have been known to occur, but are usually the result of the injection being made too deeply. No case of generalised or progressive tuberculosis infection has ever been recorded as a result of B.C.G. In some cases there is a transient swelling and tenderness in the lymph-glands, but this subsides in a few days.

(3) *Conversion to positive tuberculin reaction.* As readers are aware, B.C.G. vaccination is likely to be of benefit only to Mantoux-negative individuals; if a person has already developed tuberculin allergy as a result of a previous primary tuberculosis infection, the very localised B.C.G. infection is not likely to increase the immunity which is already present. A potent B.C.G. vaccine should produce positive Mantoux reactions in over 90% of the people vaccinated; in adults, in fact, the conversion-rate is usually nearly 100%. Newborn infants do not become positive so readily, and it is necessary to inject a larger dose of B.C.G. than in an older child or an adult.

Results of B. C. G. Vaccination at Palmerston North Hospital.

A description of the measures adopted at this Hospital for isolation of nurses from possible tuberculosis infection has been given elsewhere (Taylor & Pullar, 1949). Up to the time of writing 119 nurses have been vaccinated with B.C.G.; the nurses were offered a choice of being vaccinated on the outer aspect of the upper arm or on the outer aspect of the thigh. Both sites seem to give satisfactory results.

The local lesions resulting from vaccination have been papules varying in size from about 5 to 12 mm.; the majority, especially the larger lesions, develop slight ulceration in the centre about

3-5 weeks after vaccination, and produce a small amount of intermittent discharge.

In addition to the nurses, we have vaccinated four laboratory trainees and a small number of radiographers, and a few children who were contacts of known cases of tuberculosis. So far there have been only three of the persons vaccinated who have failed to be converted from Mantoux-negative to Mantoux-positive. These three failures all occurred with the first batch of Australian vaccine, which seemed to produce much smaller local reactions than later batches, possibly because transport arrangements have been improved since then. Two of the nurses who remained Mantoux-negative after vaccination were re-vaccinated with a larger dose of the vaccine; one became Mantoux-positive, but the other still remained negative. In the Scandinavian countries the general practice seemed to be to repeat B.C.G. vaccination once if Mantoux-conversion was not obtained, but the vaccinators there stated that there were usually a small number of people who could not be made Mantoux-positive by B.C.G.

As described in the previous article in the *New Zealand Medical Journal*, the routine here has been to use 0.0002 mg. of tuberculin P.P.D. followed by 0.002 mg. in the pre-vaccinal test. The reactions are read 72 hours after the injection, as P.P.D. sometimes seems to give a slight inflammatory reaction which has disappeared by the third day and is not a true positive reaction. For the post-vaccinal Mantoux test, which is carried out six weeks after B.C.G. vaccination, a single dose of 0.002 mg. P.P.D. is employed. In all the later groups which have been vaccinated, we have obtained 100% conversion to positive reactions, the strength of the reactions varying from + to +++ on the Aronson scale. We found that with a post-vaccinal dose of 0.0002 mg. P.P.D., a number of the reactions were rather doubtful and this dose seemed hardly sufficient to give a clear indication of the percentage who had become tuberculin-positive.

In many hospitals it is difficult or impossible to isolate the personnel after vaccination; for example, it is impossible in some districts to be sure that cases of tuberculosis are not admitted to general wards. Obviously in sanatorium staffs segregation from possible exposure to tuberculous infection is not practicable. As far as laboratory workers are concerned, it should be quite a simple matter to keep those vaccinated away from possible exposure to infection in the course of their work until the Mantoux test becomes positive, except possibly in some of the smaller laboratories. It should be emphasised again that there is no reason to withhold B.C.G. vaccination if the "quarantine" period after vaccination cannot be arranged. There is no definite evidence of any negative phase of immunity immediately following B.C.G. vaccination, and no harm will result if accidental infection does occur soon after vaccination. That is to

say, the course of the infection will be exactly the same as if vaccination had not been done. It is important, however, for statistical purposes, to keep records which show whether the "quarantine" period was observed or not.

Efficacy of B. C. G. Vaccination.

Space does not permit any detailed account of the evidence which has been produced in favour of the efficacy of this form of vaccination in the prevention of tuberculosis. A number of references were given in the article in the *New Zealand Medical Journal* previously cited, and also in the article by Dr. E. A. North in the same issue of the *Journal*. One fact which seems rather striking is that no vaccinated infant in any of the three Scandinavian countries has been known to develop tuberculous meningitis. The difficulty, of course, in obtaining statistical proof of the efficacy of B.C.G. vaccination is that it is almost impossible to obtain a control group who would be strictly comparable with the vaccinated group, as regards physique, age, state of nutrition, exposure to infection, etc. Dr. Ferguson's work in the province of Saskatchewan, Canada, has undoubtedly produced a great reduction in the incidence of tuberculosis among the nursing staff of hospitals and sanatoria as well as in other groups of the population. Dr. Ferguson has never advocated wholesale vaccination of the entire tuberculin-negative population, but prefers to use B.C.G. for those who are "unavoidably exposed" to infection. This group includes the majority of the Indians who live in reservations in the province, and a similar category is, of course, present in New Zealand in the Maoris. It would seem reasonable to expect that a properly-organised campaign of B.C.G. vaccination of Maori children and adolescents would eventually result in a considerable reduction in the incidence of and mortality from tuberculosis; the tuberculosis mortality is at present almost ten times as high in the Maoris as in the European population of New Zealand.

B.C.G. vaccination is on a voluntary basis in this country, and there is no compulsion for anyone to be vaccinated. Laboratory workers and others need have no hesitation in submitting themselves to vaccination, which is safe and harmless and produces practically no inconvenience or pain. The limitations of B.C.G. must, however, be realised; it is not to be regarded as conferring complete immunity to tuberculous infection, and tuberculosis can occur in those who have been vaccinated. It should be regarded merely as a useful adjunct to the generally accepted hygienic measures practised in hospital work to avoid infection of the staff. It cannot be denied that it is better to produce a mild, self-limiting, localised primary infection by the use of B.C.G. than to employ Mantoux-negative young adults, who have never previously been exposed to infection, in occupations where the possibility of tuberculous infection cannot be entirely

eliminated. It can be anticipated that the use of B.C.G. vaccination in all Mantoux-negative hospital personnel in New Zealand will result in a definite reduction in the tuberculosis morbidity in these groups, and bacteriologists should share in the benefits obtained by this form of protective inoculation.

References.

- Taylor, C. A., and Pullar, T. H. — *N.Z. Medical Journal*, 48, 264 (June, 1949).
 North, E. A., *ibid.*, p. 274.

COUNCIL MEETINGS

July 28th, 1949.

This was held in the Wellington Hospital. There were present Mr. N. I. Ellison (Chairman) and Messrs E. L. F. Buxton, D. Whillans, H. T. G. Olive, M. O. Ekdahl, G. W. McKinley and S. O. Jarratt.

Mr. D. H. Adamson was not present, being seriously ill, and the President, on behalf of the Council, expressed deep concern. It was arranged that news of his illness be conveyed to the Conference during its sitting. Mr. H. Foster was appointed as Mr. Adamson's proxy for the meeting.

Mr. H. T. G. Olive and Mr. H. Ward were appointed as Association deputies on the Salaries Advisory Committee.

The Auckland Delegate advised that the first examination would take place in Auckland late in October. Mr. E. L. F. Buxton was appointed as first Examiner on behalf of the Association.

The following new Junior Members were elected members of the Association:—Misses E. J. Wilkinson and M. H. Burt (Wanganui), Misses J. L. Laws, D. Savage, B. Rudd, and M. Lamb (Auckland), Miss L. Williamson (Christchurch), and Messrs D. C. Smith and A. A. Collins (Wellington).

Resignations were received from Miss S. McDonald (New Plymouth) and Mr. L. S. Minifie (Auckland).

November 26th, 1949.

This was held at Wellington Hospital. There were present Mr. E. L. F. Buxton (Chairman), Miss J. Byres, and Messrs D. Whillans, H. T. G. Olive, D. H. Adamson, G. W. McKinley and Mr. H. Hutchings (the latter by invitation). Apologies were received from Messrs Ellison, Ekdahl, and Jarratt.

The following new Junior Members were elected:—Miss S. Jenkins (Timaru), Miss J. E. Carter and Messrs J. H. Carter and K. Bilkey (Auckland), Mr. C. Rollet (Wellington), and Mr. J. Carrol (Hastings).

Resignations were received from Miss J. Caughey and Mr. E. Robinson (Auckland).

The situation following the application of an Industrial Union to include certain Laboratory Staff in the Union, was dealt with at length. It was decided to accept our solicitor's advice and join in proceedings instituted in the Supreme Court by the Registered Male Nurses' Association, and that the Minister of Health be informed of all developments so far.

SPECIAL GENERAL MEETING

This was held in the Pathology Department, Wellington, as notified to the members of the Association.

There were ten members present and twenty-six proxy votes were held. A total of thirty-six votes were cast for the proposal (see this *Journal*, 1949, 51).

The proposal was therefore carried.

LABORATORY FINDINGS IN ENTERIC FEVER CAUSED BY *S. PARATYPHI A*.

J. R. Callaghan.

(From the Department of Pathology, Public Hospital, Auckland.)

Prior to World War I., enteric fever, due to *S. paratyphi A*, was a rarely recognised condition. Isolated cases had been recorded from Germany, Austria, Hungary, Russia and France. One gall bladder infection associated with fatal tuberculous meningitis was reported from Britain. Lehman (1).

Torrens (2) reported 1082 cases of paratyphoid A fever among the British forces during that war, while Bumcke (3) reported between 20,000 and 30,000 cases among the German troops. During this period in Britain, *S. paratyphi A* was isolated repeatedly from convalescent cases returning from France and the East, but the civilian population was not affected.

Fairbrother (4), reporting a case in England in 1947, stated that enteric fever caused by *S. paratyphi A* was a rare disease in that country. In a recent survey of Salmonella types encountered in Australia, Atkinson, Woodroffe and Macbeth (5) reported one case of enteric fever due to *S. paratyphi A*. They comment on the rarity of this disease in Australia.

Enteric fever due to *S. paratyphi A* appears to be more common in the United States of America, as Edwards, Bruner and Moran (6), in their survey of American Salmonella types, reported 28 isolations all from cases of enteric fever.

In 1948, one fatal case of enteric fever due to *S. paratyphi A* occurred in Auckland. During 1949, sixteen further cases have been investigated in this Laboratory, and it is the purpose of this article to present the relevant findings obtained from these investigations.

Epidemiology.

A full report on the epidemiology of these cases is beyond the scope of this article, but as there are many interesting points, a brief resume will be given.

Case 1: Maori adult male, July 1948.

Admitted to hospital with enteric fever. *S. paratyphi A* isolated on two occasions from blood culture. Resident of Auckland City West, and had never been out of New Zealand. Bacteriological examination of faeces from contacts was negative. This case proved to be fatal.

Case 2: Maori adult male, April 1949.

Admitted to hospital with enteric fever. Resident of Maori Settlement in Auckland. Blood culture and faeces yielded growths of *S. paratyphi A*. No contact with case 1.

Case 3: Maori adult male, April 1949.

Admitted to hospital with enteric fever. Also resident of Maori settlement and had contact with case 2. Some months earlier this patient had been in hospital with typhoid fever. During a routine check of the settlement for Vi antibodies, this patient stated that he had been ill for several weeks and a relapse of the typhoid fever was suspected. On admission to hospital, *S. paratyphi A* was isolated from blood and faeces.

Case 4: Maori adult male, April 1949.

Admitted to hospital with enteric fever. Although resident of the Maori settlement, denied contact with previous cases. He was employed as a labourer at the sewage disposal works at Auckland. He had also been a patient in hospital with typhoid fever some months previously.

Case 5: Maori adult female, May 1949.

Admitted to hospital from a district ten miles south-east of Auckland. Gave a history of four weeks' illness, but denied contact with previous cases. *S. paratyphi A* was isolated from faeces.

Case 6: Maori adult female, June 1949.

Admitted to hospital with enteric fever. Mother of case No. 5. *S. paratyphi A* was isolated from blood and faeces.

Case 7: Maori adult male, July 1949.

Admitted to hospital with enteric fever. Resident of North Shore. No contact with previous cases. *S. paratyphi A* was isolated from blood and faeces.

Cases 8, 9, 10, and 12 Maori adult males; Case 11, Maori infant, male; and Case 13, Maori adult female. July 1949.

These cases were admitted to hospital within a few weeks of each other. All had contact with case No. 7, who was a frequent visitor to their home, in Auckland City West. *S. paratyphi A* was isolated from the bloods of cases 7, 8, 9, and 11 and from the faeces of all cases. Case No. 13 was discovered during the routine examination of faeces from the contacts and stated that she had not been ill at any time. During her stay in hospital she continued to excrete *S. paratyphi A* in her faeces and finally a cholecystectomy operation was performed. The contents of the gall bladder proved to be negative for *S. paratyphi A*.

Case 14: Maori adult male, September 1949.

Had a history of several weeks' illness when admitted to hospital. Had contact with case No. 9, having worked on the same bench with him at his place of employment. *S. paratyphi A* was isolated from his faeces. His antibody level on admission was *S. paratyphi A* (O) negative; *S. paratyphi A* (H) positive 1/640.

Case 15: Niue islander, adult male.

Admitted to hospital with enteric fever. Resident of Auckland City. This patient was living in an apartment house with

46 other people. When this house was inspected, ten people were found to be ill and four were admitted to hospital. *B. faecalis alkaligenes* was isolated from the blood of all four cases. However *S. paratyphi A* was isolated from the blood of case 15, who two weeks earlier had been visiting two sick friends, cases 16 and 17.

Cases 16 and 17: *Niue islanders, adult males.*

These two cases were those visited by case 15. Case 16 showed antibodies to *S. paratyphi A* (O) positive to a titre of 1/20, and (H) positive to a titre of 1/320. Case 17 showed (O) antibodies to a titre of 1/40 and (H) antibodies to a titre of 1/640. *S. paratyphi A* was isolated from the faeces of both cases.

Bacteriology.

Blood Culture.

S. paratyphi A was isolated from the blood of cases 1, 2, 3, 5, 6, 7, 8, 9, 11, and 14. Cultures from cases 10 and 12 were negative, but this can be explained as the cultures were taken late in the illness. Cases 4, 13, 15, 16 and 17 were not examined, as all were convalescent when discovered. The medium used for blood culture was bile broth, consisting of equal parts of ox bile and nutrient broth. This gave profuse growth of *S. paratyphi A* after 24 hours.

Examination of Faeces.

The procedure followed in this laboratory in the routine examination of faeces for pathogens is as follows.

- (1) Specimens are plated directly on Maconkey agar (Difco).
- (2) Specimens are plated directly on *Shigella-Salmonella* (SS) agar (Difco).
- (3) Specimens are treated by enrichment in Selenite F medium (Baltimore Laboratories), followed by plating after 16 hours on Maconkey agar.

Over a period of six months records have been kept, and the number of isolations obtained on each medium recorded. These are summarised as follows:—

Organism	Positive total isolations	Positive isolations on Maconkey	Positive isolations on S.S.	Positive isolations after Selenite enrich.
<i>S. typhi</i>	28	10	8	27
<i>S. paratyphi A</i> ...	34	10	19	32
All other salmonellae	40	8	16	31
<i>Shigellae</i>	13	6	10	5

Selenite F enrichment has proved a very satisfactory procedure in the isolation of *S. paratyphi A* from faeces and is now the only method used when dealing with large numbers of faeces such as is experienced in the investigation of contracts.

S. paratyphi A was isolated from the faeces of all patients

with the exception of case (14). Several of the patients continued to excrete the organism in the faeces for periods of up to eight weeks. A clearance was given when six consecutive negatives were obtained with an interval of one day between specimens. Microscopically the faeces showed no abnormalities, a few cases showing an occasional polymorph.

Serology.

The Widal Reaction.

Unfortunately, during the early stages of this investigation mixed (H) and (O) suspensions were used in the examination of sera for antibodies. When it became apparent that a considerable number of cases could be expected, separate (O) and (H) suspensions were prepared. The strain used in all antibody tests was *S. paratyphi A* N.C.T.C. 1015.

As a general rule, sera taken from patients early in the disease showed low antibody titres rising after two weeks and reaching a maximum between the fourth and the sixth week, thereafter falling rapidly. The highest mixed (O) and (H) titre recorded was 1/640, the highest (O) titre 1/40, and the highest (H) titre 1/640.

It is recognised that antibody response in paratyphoid fever is not as high as in typhoid fever and this was particularly noticeable with (O) antibodies. Many cases failed to produce (O) antibodies over a titre of 1/20. Case 1, when first examined failed to show antibodies to *S. paratyphi A* (O) or (H), but on the day of death, one week later, his mixed (O) and (H) titre was 1/640 to *S. paratyphi A* N.C.T.C. 1015 and 1/640 to a suspension prepared from the organism isolated from his blood.

Case 9, who subsequently relapsed, showed no antibodies (O) or (H) when discharged from hospital. The highest recorded titre during his illness was 1/80 during the sixth week. On re-admission, his titre was *S. paratyphi A* (O) negative and *S. paratyphi A* (H) positive 1/80.

Case 13, who was designated a symptomless carrier, showed an (H) titre of 1/80 on admission, which remained stationary for a period of eight weeks when it then rose to 1/160.

The antibody titres of the case described by Fairbrother (4) were similar to those obtained in these investigations. On admission to hospital, this case showed agglutinins to *S. paratyphi A* (O) 1/20 and (H) 1/80. When examined six weeks later, the (H) titre had risen to 1/640 while the (O) titre remained stationary.

Antigenic Classification.

The antisera used in the serological classification were obtained from the Standards Laboratory for Serological Reagents, Colindale, London, and gave consistent results. No definite link could be obtained between all the cases, and no previously known

case was found who could have been investigated as a possible carrier. The only symptomless person discovered in the search for contacts had never been away from New Zealand and had no contact with any case other than those occurring in her own home.

Discussion.

All organisms isolated gave the usual biochemical reactions of *S. paratyphi A*, but it is of interest that no organism tested produced hydrogen sulphide. This reaction is said to be variable. Usually only a small amount of gas is produced in carbohydrate media by *S. paratyphi A*. It was our experience that the amount of gas produced was comparable with that produced by other members of the Salmonella group.

It was suggested that the possibility of shellfish being the cause of the outbreak be investigated. Many outbreaks of typhoid fever have been traced to shellfish, but it is rarely that they are implicated in paratyphoid fever. On the instigation of the Medical Officer of Health, Auckland, one hundred and forty-four samples of mussels, pipis, cockles and winkles were examined from beaches in the Auckland area. No pathogenic organisms were isolated, although one non-motile coliform organism gave the biochemical reactions of a salmonella and also gave slide agglutination with *S. paratyphi A* (O) antisera. Mr. S. W. Josland, Animal Research Station, Wallaceville, kindly determined the antigenic structure as Factor 1 (somatic) of the Salmonella group present.

The isolation of *B. faecalis alkaligenes* from the blood of the four contacts of case 14 was of interest as it has long been recognised that this organism, when associated with a bacteraemia gives rise to typhoid-like symptoms. All patients recovered rapidly and were discharged.

All cases with the exception of case 13 were clinically true enteric fever and with the exception of the three Niue Islanders were all Maoris. No Europeans have been affected so far.

Summary.

The laboratory findings in seventeen cases of enteric fever due to *S. paratyphi A* are described and discussed.

Antibody titres obtained were uniformly low. This was particularly noticeable with (O) antibodies.

S. paratyphi A was recovered from the blood in ten cases and from the faeces in sixteen cases.

Enrichment in Selenite F medium proved a very satisfactory procedure in the isolation of *S. paratyphi A* from faeces.

No organism tested produced hydrogen sulphide and the amount of gas produced in carbohydrate media was comparable to that produced by other Salmonellae.

The examination of shellfish resulted in the isolation of one

coliform organism possessing a somatic antigen of the Salmonella group.

B. faecalis alkaligenes was isolated from the blood of four contacts with typhoid-like symptoms.

It is felt that *S. paratyphi A* must now be accepted as an organism likely to be found in further New Zealand cases.

Acknowledgments.

I wish to thank Dr. S. Hills, Director of Laboratory Services, Auckland Hospital Board, for permission to publish this paper, and Dr. A. W. S. Thompson, Medical Officer of Health, Auckland, for permission to use the relevant epidemiological data.

References.

- (1) Lehman, E. 1916. Zbl. Bakt. Abt. 1. Orig. 78, 49.
- (2) Torrens, J. A. 1923, Official Medical History of the War Medical Services Vol. 1.
- (3) Bumcke (1925) Z. Hyg. Infect. Kr. 105, 342.
- (4) Fairbrother (1947), Monthly Bull. Ministry of Health. (Nov.)
- (5) Atkinson, Woodroffe and Macbeth (1947). Aust. J. Ex. Biol. and Exp. Science. 27, 375.
- (6) Edwards, Bruner and Moran. (1948) J. Infect. Dis. 83, 320.

DEPARTMENT OF HEALTH INTERMEDIATE EXAMINATION FOR HOSPITAL LABORATORY TRAINEES

FRIDAY, 28th OCTOBER, 1949 — 9.30 A.M.

Written Paper (3 hours).

- (1) Explain briefly the meaning of each of the following terms:—
 - (a) Fractional sterilisation.
 - (b) Anaerobe.
 - (c) Haemolysis.
 - (d) Achlorhydria.
 - (e) Glycosuria. (15)
- (2) State how you would adjust the reaction of a batch of nutrient broth. (15)
- (3) Describe how you would carry out a bacterial count and estimation of coliform organisms on a sample of drinking-water. (20)
- (4) How would you perform a reticulocyte count? Explain the significance of an increase above normal. (15)
- (5) Describe one method for estimation of the chlorides in cerebro-spinal fluid, explaining the chemical principles involved. (15)

- (6) Describe how you would prepare and pack the necessary specimens to be sent by post to a central laboratory for the following tests:—
- (a) Blood Wassermann Reaction.
 - (b) Diphtheria Virulence Test.
 - (c) Friedman Test.
- (20)

Practical.

Friday, 2.30 - 5.30 p.m.; Saturday, 9 a.m. onwards.

Time allowed: 30 minutes in each group).— A maximum of 20 points will be allotted for each group.

Instructions.—Candidates will be divided into five groups. A signal will be given at the end of 30 minutes, when groups will change over, for which five minutes will be allowed. At the end of the second change, there will be a break of fifteen minutes for tea, which will be served in the Staff Room. Saturday morning from 9 a.m. is allotted for final work on cultural examinations, necessary for identification of organisms in 1a. and 2a. Label all practical work with your examination number.

GROUP 1—

- (a) Identify organisms growing on blood agar plate.
(*C. diphtheriae, Haemolytic streptococcus, Streptococcus viridans, N. catarrhalis.*)
- (b) Write brief notes on slides—
 - (1) C.S.F. deposit, nigrosin stained.
 - (2) Urine deposit, stained Z.N.
(*Pneumococcus, M. tuberculosis.*)

GROUP 2—

- (a) Identify organisms growing on plate of MacConkey medium.
(*S. paratyphi B, B. coli.*)
- (b) Write brief notes on slides—
 - (3) Pleural pus-Gram stained.
 - (4) Urethral smear-gram stained.
(*Streptococci and pus, gonococci and pus.*)

GROUP 3—

- (a) Do chemical examination on urine supplied.
(*Sugar, 2.2%, acetone positive.*)
- (b) Examine faeces for occult blood.
(*Positive.*)

GROUP 4—

- (a) Type specimen of blood provided.
(*Group A.*)
- (b) Prepare 3 Pasteur pipettes from tubing supplied, and

state how you would sterilise them.

GROUP 5—

- (a) Do leucocyte count on blood supplied.
- (b) Do differential count on blood film supplied.
- (c) Report on abnormality found in blood films 5, 7, and 9.
(a) and (b) were from a rather low but otherwise normal leucocyte picture; (c) were films from a case of lymphatic leucaemia, one of erythroblastosis foetalis and one film showing basophilic stippling.

A total of eighteen persons sat this examination, of whom sixteen were successful. These latter were Mr. J. W. Carroll (Hastings), Miss E. I. Hicks (Wanganui), Misses M. Dick and F. D. Mulligan and Messrs J. P. Walsh, W. J. Sloan, R. J. Patterson, and J. T. Holland (Auckland), Misses M. K. North and K. R. Biggs, and Messrs H. E. Hutchings and C. E. Felmingham (Palmerston North), Miss J. M. Bailey and Mr. G. R. C. Meads (New Plymouth), Miss H. J. McDiarmid (Hamilton), Miss B. L. Broughton (Dunedin).

—TO THE EDITOR

Sir,

It was rather a coincidence that your last issue, featuring an article by F. M. Rush-Munro setting out standardised quantitative microscopic urinalysis, should have arrived here the day after I had drawn up a list of variables affecting such analyses. This list of my own findings may interest some readers.

FACTORS GOVERNING FINDINGS IN URINE DEPOSITS.	OPTIMUM.
1. Fluid intake of the patient.	Normal for patient.
2. Power fluctuation governing centrifuge speed.	Standard voltage.
3. The angle of taper and the fineness of the tip of the centrifuge tube.	10° and 0.25 cms.
4. Angle of draining centrifuge tube.	50° to horizontal.
5. Number of seconds gauged for draining centrifuge tube.	2 seconds.
6. Number of oscillations or revolutions of platinum loop in stirring deposit.	20.
7. Depth of film under coverslip.	To fill space under a No. 2 coverslip.
8. Areas of preparation examined.	$\frac{1}{2}$ sq. in.
9. Number of fields counted.	20.
10. Magnification of objective and ocular.	1/6in. objective and 6 x ocular.
11. The personal opinion of the examiner.	"Infallible."

Though it is easier to criticize than to construct an article, I would suggest that it is difficult to leave volumes of deposit varying in viscosity which will always approximate 0.5 mls. in the bottom of the tube after decantation, and that every loopful varies in volume. The thickness of the coverslip and the magnification of the ocular were not stated in the article.

I am, etc.,
D. H. ADAMSON.

NEW ZEALAND ASSOCIATION OF BACTERIOLOGISTS (INC.).
FOURTH ANNUAL REPORT, 1949.

Ladies and Gentlemen,

On behalf of your Council it is my pleasure to present the Fourth Annual Report.

Membership.

Membership now stands at 51 senior members and 104 junior members: there were six resignations, leaving thus an increase of 24 members.

Financial.
The Finances of the Association are in a healthy state, as Mr. Ellison, acting on behalf of Mr. Adamson, will show on presentation of the Treasurer's Balance Sheet.

Annual Conference, 1948.

This was largely attended and as you know was an outstanding success and a credit to our Auckland colleagues.

Journal.

The Standard of the Journal remains as high as ever, thanks to the indefatigable efforts of our hardest worked colleague, Mr. Whillans. In presenting his report, your Council hopes that he will refer to the so-small number of contributions. Messrs Ekdahl and Olive have been associated with Mr. Whillans as co-editors.

Intermediate Examination.

After disappointing delays and following strong submissions by your Council, represented by Messrs. Buxton and McKinley, the Health Department has advised that the first examination will be held at Auckland Hospital in October next. So comes to fruition the seed originally sown by Mr. Buxton.

Certificate Examination.

This now bears the title of "Certificate of Proficiency in Hospital Laboratory Practice" and whilst not perfect, at least does not include the word "Technique." The Advisory Committee of Pathologists is to submit a revised syllabus, and it is hoped that due cognisance will be taken of that proposed by the Association after lengthy deliberation.

Diploma Examination.

As advised in the last Journal, the institution of a Diploma examination by the University authorities has been found impracticable. After lengthy discussion your Council submitted to the Pathologists' Conference at Christchurch on 25th May last, the proposal that the Association conduct a higher examination than that of the existing Certificate. Your representatives, Messrs Buxton and McKinley, reported that the proposal was, in the main, received favourably. It is therefore incumbent on the Association to define the scope of this examination.

Salaries Schedule.

This contains certain anomalies affecting individual members. These should be made the subjects of applications directly to the Salaries Advisory Committee, on which the Association is ably represented by Messrs Buxton, Whillans and McKinley. Matters affecting the Association as a whole have already been made the subject of remits, of which you are now aware.

Generally, your Council feels that members approve the Schedule.

Application has been made to the Director of Stabilisation for the overall increase in Salaries and Wages as approved by the Arbitration Court. The Director advises that the matter is being considered by the Hon. Minister.

Essay Competition.

Your Council is most concerned at the lack of interest shown by

Junior members this year. Only one entry, a technical study, has been received.

Council.

Four meetings were held during the year. The Council has worked smoothly and well under the capable leadership of your President. Messrs Ellison, Buxton, Whillans, Ellison, McKinley and Olive have ably represented the Association at various meetings, sometimes at great personal inconvenience.

The resignation from the Council of Mr. A. J. Samuel, of Dunedin, was accepted with regret.

This year in most Laboratories has been a particularly busy one. Many workers are experiencing overcrowded conditions with little hope of improvement in the meantime. However, there is being maintained the high standard of work that is the main object of our Association. The altered conditions and shifting scene of Hospital control may prove somewhat disturbing, but must not be allowed to shape the future of the Association nor deflect it from its objects.

We approach the 5th Annual Conference with confidence. There is an interesting programme before us, the credit of which goes to the Wellington sub-committee and the Conference Secretary, Mr. Olive.

Your Council trusts that you will have an enjoyable and profitable 1949 Conference.

For and on behalf of the Council,
S. O. JARRATT,
Hon. Secretary.

A FURTHER REPORT ON THE ANNUAL CONFERENCE, 1949.

Submissions to the Salaries Advisory Committee.

Mr. E. L. F. Buxton: Intimated that there was some misunderstanding among members as to the correct procedure for submitting claims. These must go individually direct to Mr. L. S. Cameron, Secretary of the S.A.C., P.O. Box 5013, Wellington. A copy of the submissions to the Hon. Secretary of the Association was an added benefit, as delegates to the S.A.C. may then have the opportunity to discuss matters with the Executive. It should be remembered, however, said the speaker, that delegates could in no way force issues at the S.A.C. and often the decisions made were the results of compromise. He assured all that he and the present delegates, Messrs. D. Whillans, G. W. McKinley, would do all in their power to secure the best possible terms. He warned members that results may not be achieved for some time, as decisions had to pass through the General Advisory Committee and other hands before effect could be given to these.

Mr. D. Whillans: Urged that members should exhaust all possible means of local settlement before approaching the S.A.C. The S.A.C. would not consider petty grievances, but was there to see that fairness, especially in grading, was maintained.

The President: Emphasised the strictly confidential nature of the commission, and that the Association could not seek information on confidential business. He stressed the fact that the Association had nothing to do with the running of the S.A.C.

Mr. Fischman: Enquired whether matters concerning general principles should be addressed to the Hon. Secretary of the Association for transmission to the S.A.C.

The President: Replied that the time and place to make such submissions was now at the Conference.

Mr. Blore: Queried the necessity of a higher examination than the Certificate already held.

The President: Stated that recent feelings on the matter intimated

the possibility of future examinations being of a higher standard. He requested that this matter be brought up later in the business.

Report of Representatives Attending the Pathological Conference in May.

Mr. E. L. F. Buxton: Gave an outline of the decisions made at the Conference.

Mr. G. W. McKinley: Stated that the request for a higher examination had been favourably received, but that there had been considerable difficulty in reaching satisfactory agreement on the title of the present Certificate. It now was a "Certificate of Proficiency in Hospital Laboratory Practice."

Mr. Bloore: Asked that we should compare our standard with that of other countries, especially England, where members of the Institute of Technology were known as Medical Technologists.

Miss Byres: Stated that much specialisation took place in large hospitals, but that overall the standard was not as high as in New Zealand.

Miss Partridge: Stated that the N.Z. Bacteriologist rated a much higher standing than the English Technologist, but that in England, Bacteriologists were nearly always possessed of a Medical degree. She stated that some Laboratories, particularly the L. C. C., were ahead of New Zealand Laboratories.

Mr. Foster: Stated that in England, the training of Technologists was carried out mainly by Medical Schools.

The President: Summarised the opinion of overseas members by stating, that on the average the New Zealand standard appeared higher, but there was no attempt to belittle in any way the English standard.

Essay Competition.

Mr. D. Whillans: Intimated a complete lack of interest on behalf of the Junior Members. There had been but one entry for one section of the Competition, fortunately of a high standard. He was at a loss to account for this complete lack of enthusiasm, and asked any Junior Member present to reply, giving if possible, any reasons for non-entry.

The President: Stated that he could not find any reason for the juniors' lack of enthusiasm. He always had the interest of the Junior Member at heart, as they were the Bacteriologists of the future. There were two sections: (1) Technical; (2) Essay. The latter, one might use as subject matter, "the development of the Association in N.Z." or biographies of such men as Hurley, Armitage, Dorey, etc.

Mr. D. Whillans: Offered various subjects such as (1) Serial section preparation and staining; (2) Blood film staining; (3) Modification of any Laboratory Technique, as subjects for the Technical Section. He hoped that next year after what he had said, there would be several entries for the Competition.

Mr. Ronald: Suggested that the incoming Council should draw up a list of subjects for the guidance of the Juniors.

Mr. Hutchings: This suggestion would be too limiting.

Miss Partridge: Why not suggest five subjects and give the Junior Member the option of another, to be the member's own selection?

Mr. Samuel: Suggested that the imagined magnitude of the task may scare some Juniors, and that they may consider their effort too small in dealing with what may be a good technical problem.

The President: They should at least try, however small their effort, it was surprising what could and had been done by Juniors in the past.

Mr. Saunders: Suggested that the Senior members may be able to suggest subjects to Juniors in their own laboratories.

Mr. Pierard: Stated that he would be in a position to help Wellington or Auckland Juniors who wished to follow the President's suggestion, as he considered this subject worthy of several articles.

This subject was closed and stands as reported for further discussion

by the council.

Salaries Schedule.

Mr. E. L. F. Buxton: Stated that an application had already been made by the Hon. Secretary to the Director of Stabilisation for an overall wage increase of £34 approximately. He asked for support of a motion from the Conference to the Minister of Health, reiterating this request in order to expedite the matter—

"That the Annual Conference of Members of the New Zealand Association of Bacteriologists now meeting in Wellington unanimously endorses the action of their Executive on July 5th last in making application to the Director of Stabilisation for the overall wage increase as pronounced by the Court of Arbitration on 12th April, 1949."

Mr. E. L. F. Buxton; Mr. H. T. G. Olive.—Carried.

Intermediate Examination and Prerequisites.

Mr. Whillans: Stated that where laboratories were accredited as training centres, the successful candidate required two further years only before sitting for the final exam. We should adopt the policy of making the Intermediate exam. compulsory, otherwise no weight would be attached to it. Personnel beginning after November 1949, should be able to pass the exam. in four years, but they may do so in three years. Exams. would be held in Auckland or Dunedin.

Mr. Ronald: Is it not compulsory?

Mr. Whillans: No, not at the moment! It should help to stimulate people to higher effort. Nothing was gained without effort. They would have three opportunities of failing and then should not pass on.

The President: Stated he was personally against this view, as no exam. debars a person from sitting time and time again.

Mr. Buxton: Agreed up to a point. He considered that the salary bar at the end of the 4th year should be the limit.

The President: Considered Mr. Whillans' suggestion a retrograde step, as not all could pass readily.

Mr. Whillans: Whom do we wish to encourage in the Profession? Those who cannot make the Intermediate grade or those who are willing to apply themselves? Surely the standard of the Profession cannot be raised if we encourage failures, and surely four years should be sufficient time. If a candidate was ill at the time, other arrangements could be made. Mr. Whillans could not agree with Mr. Ellison, and stated he considered the Exam. should be compulsory.

Mr. President: Contended that the restriction of time allowed to pass operated disfavouredly towards the candidate.

Mr. Whillans: But increments would go on up to a certain stage.

Mr. President: Requested that as this matter vitally affected them, a Junior from the Conference should have something to say on the matter.

Mr. Pierard: Stated that the policy of the Wellington laboratory was that if a trainee showed promise, he was allowed to proceed. He did not consider trainees should be expected to study for a degree, and sit the Intermediate exam. at the same time.

Mr. Hutchings: Considered that the salary bar was the only logical conclusion. This would have the effect of creating an incentive for further study and work. He would support the contentions of Mr. Whillans if a salary bar was made to operate at the Intermediate stage.

Mr. Buxton: Stated that trainees who failed their exam. would not necessarily be kept at the 4th year salary of £320, but could apply for a transfer to Laboratory Assistant status.

Mrs. Isabeth: This would immediately debar the trainee from any further attempt at the Exam.

Mr. Buxton: Stated that this was the time to receive policy on this

matter, and requested other members' views.

Mrs. Isabeth: Pointed out the hardship caused some juniors in their difficulty in receiving training in centres.

Mr. President: Stated that the policy of giving juniors in outside laboratories preference in filling vacancies in centres, was becoming an accepted practice.

Mr. Whillans: "This Conference of the New Zealand Association of Bacteriologists approves of the principle, that any Trainee who commences duty after November 1st, 1949, in any Laboratory covered by the Hospital Employment Regulations, 1948, Amendment No. 2, and who has not passed the Intermediate Exam on the fourth anniversary of entry into such a Laboratory, shall remain at the status and receive the emolument of a fourth-year trainee until such time as a pass is obtained. Provided that the right of appeal shall be allowed on the grounds of hardship against such grading."

Mr. D. Whillans; Mr. H. Hutchings.—Carried.

Mr. Peddie: If after repeated failures, the candidate succeeded in passing, would he have to spend a further two years before sitting the final exam?

Mr. Whillans: Yes.

Mr. President: I think we all agree on that point.

Mr. Hawke: Does that apply only to trainees?

Mr. Whillans: Yes.

Mr. Peddie: Who is going to fix the bar, and to whom should appeals be lodged?

Mr. President: The Health Department.

Mr. Bloore: Contested the wording of the motion. He withdrew an amendment in favour of the original motion.

Mr. McKinley: Stated that Pathologists would prefer those candidates for entry into training centres who had passed their Intermediate Exams.

Mr. Bloore: Contended that this motion would discourage those candidates who did not have good examination ability.

Mr. President: Put the motion to the Conference. This was duly carried.

Presentation of Financial Report and Balance Sheet.

This was presented by Mr. N. J. Ellison in the absence of the Hon. Treasurer, Mr. D. H. Adamson.

The President asked that the Hon. Secretary should convey to Mr. Adamson the Association's praise for the excellent manner in which the balance sheet had been drawn up. The figures show that the receipts for advertisements in the journal were double those of last year. Donations had been received from Drs. Pullar and Fowler. The Journal expenses were the same. In explaining the travelling expenses of members to Council Meetings of £24/13/3, Mr. Ellison pointed out that these covered periods back to 1947. It was not fair to expect members to be out of pocket on this account, but there were still some who paid their own, or had them paid by Hospital Boards. There were no unfinancial members. The net holdings were between £66 - £90. The balance sheet was in a healthy state. The members were to be congratulated on paying subscriptions early.

The President then presented the statement for adoption—

"That the Financial Report and Balance Sheet as presented be adopted."

Mr. W. Smith; Mr. J. J. Peddie.—Carried.

Election of Officers.

Office-bearers for the year were elected as follows:—

President: Mr. N. J. Ellison. Vice-Presidents: Mr. E. L. F. Buxton,

Mr. D. Whillans. Hon. Secretary: Mr. G. W. McKinley. Hon. Treasurer: Mr. H. T. G. Olive. Council Members: Miss J. Byres, Mr. D. H. Adamson, Mr. M. O. Ekdahl, Mr. S. O. Jarratt.

The President pointed out that some embarrassment and confusion had been caused by members nominating candidates for office without their consent. Steps would be taken in future to see that this did not occur again.

Proposal for Higher Examination than Certificate.

Mr. McKinley: Reported on the suggestion, that we conduct a higher examination than the certificate, placed before the Pathologists' Conference in May last. He gained the impression that it was favourably received, and that we could expect some suggestions and assistance from the Pathologists.

Mr. Jarratt: Stated that the Council favoured an incentive towards improved standard of work, both in theory and in practice. His opinion was that this was the best means of doing so, and that the merit should be determined solely on the candidate's knowledge and practical application of the subject. The subject to be the candidate's own choice; to be accompanied by a thesis, and the candidate to have carried out some original work. A panel of examiners to be chosen, comprising Bacteriologists and Pathologists. Awards to be made in the form of, a Fellowship. The exam. to be of the highest possible standard.

Mr. Ronald: The Intermediate Exam. is now an accomplished fact, and the Final Examination standard is being constantly raised. Would not this obviate the necessity for a higher exam.?

Mr. Jarratt: This proposed exam. is intended for those who have already passed and are resting on their laurels.

Mr. Peddie: Is it not the intention that in future, all candidates for the final exam. will possess a degree?

Mr. Bloore: Agreed with the principle and considered that if it was made as tough as possible, that it would be an incentive to higher standards.

Mr. Peddie: Considered that the two examinations we had were sufficient for the moment.

Mr. Whillans: His opinion was that the examination should be divided into sections, and that a thesis only should be necessary.

Mr. President: There may be a tendency to specialise, to the detriment of a good knowledge in all branches. He considered that, a prerequisite.

Mr. Pierard: Why not divide into sections on the lines of the English Society.

Mr. President: "That the question and scope of a Higher Examination be left to the incoming committee."

G. W. McKinley; D. Whillans.—Carried.

Prerequisite for Intermediate and Higher Examination.

Mr. President: Stated that there seemed to be some ambiguity recently attached to the prerequisite.

Mr. Pierard: Originally the Health Department ruling was that this should be University Entrance. He saw no reason why there should be any ambiguity.

Mr. Ronald: This should be settled immediately the higher prerequisite the better in his opinion.

Mr. Pierard: "That the Secretary be empowered to request clarification of this position from the Director-General of Health, stating that the Association is emphatic that the University Entrance shall remain the prerequisite for the certificate."

Mr. J. Pierard; Mr. H. T. G. Olive.

Essay Competition.

The President: Congratulated Mr. H. Hutchings, Palmerston North, on the high standard of the technical paper presented. Mr. Hutchings wins the Association's prize of £2/2/- for 1949. (To be reported in the Journal.) There were no entrants for the Essay Prize for 1949. The President deplored the lack of interest on the part of Juniors and hoped we would see more competition in 1950.

Circular from D.G.O.H. Limiting the Number of Members Attending the Conference.

The President: Explained to members the Health Department circular, and that sent out by the Conference Secretary. He stated that had it been interpreted literally it would have meant the stifling of the Conference, as so few would have been able to attend. However, on approaching the Health Department, "Bacteriologists" was interpreted to include those qualified and those in training, so that more were able to be present. He advised that the incoming Council should stress the scientific nature of the Conference to the Minister early in the year. He asked that the Association should defray the expenses where loss of pay had been experienced by anyone attending the Conference, and that applications for such be made as soon as possible.

"That the President's action in this matter be endorsed."

Miss B. McKenzie; Mr. V. J. Hawke.—Carried.

Mr. Buxton: Stated that considerable confusion had been caused by the wording of the Minister's circular.

Mr. Olive: Viewed the circular with concern, as only those specified by the Minister could attend.

Mr. Whillans: "That a letter be sent to the Director-General of Health stating the views of the Association and embodying the following:—

"This Association views with concern the act of the Minister limiting the number of delegates. In view of the fact that it is a scientific and educational Conference, opportunity should be given to as many delegates as the Director of the Laboratory or Hospital Authority concerned can allow to attend. Such attendance should be on full pay."

Mr. D. Whillans; Mrs. Isabeth.—Carried.

Location of Conference, 1950.

Mr. H. Foster: Offered the facilities of Christchurch.

Mr. A. J. Samuel: Stated that provided the Conference could be held in the vacation, Dunedin would welcome the Conference.

Mr. W. J. Smith: Stated that Hamilton could show something instructive and asked that the Conference consider the possibilities, if not next year, then in 1951.

Mr. Buxton: "That the 1950 Conference be held in Dunedin during the vacation."

Mr. E. L. F. Buxton; Mr. H. T. G. Olive.—Carried.

Mr. A. J. Samuel: Thanked the Conference for making Dunedin the venue for 1950.

Salary Scale Remits.

Mr. Buxton: Considered that this Conference should attempt to raise the scale for Trainees in certain instances.

Mr. Whillans: Stated that assistants had been taken on who possessed a School Certificate only. He considered that they should be apprised of the necessity of University Entrance for completion of training.

Mr. Saunders: The Association should point this out also.

Mr. Buxton: "That the following remits be sent from this Conference to the Salaries Advisory Committee:—

1. That the commencing Salary for Trainees with University

Entrance be £195 - £215.

2. That:—

(2.E) Subject to prior approval of the Director-General of Health, a commencing salary higher than the first-year salary may be paid, having regard to the age, educational qualification of the person to be appointed as a Bacteriological Trainee."

Mr. E. L. F. Buxton; Miss J. Byres.—Carried.

Mr. Bloore: Bacteriological Trainees in all approved training centres would be affected by this.

Miss Tracey: Not all laboratories have been approved as training centres.

Miss Tracey: Suggested with reference to training, that Seniors in centres and approved laboratories should assist outside laboratories by instituting some form of instruction and competition. Also that the Council should make the suggestion to all Seniors responsible for training that lectures and practical demonstrations should be given regularly.

Nomination Forms for Office-Bearers.

Mr. McKinley: "That as a recommendation to the incoming Council, the forms which are circularised for nominations for office-bearers should have a space provided for acceptance of nomination."

Mr. G. W. McKinley; Mr. E. L. F. Buxton.—Carried.

Journal Report

Mr. Whillans: Expressed in no uncertain manner his disappointment in the co-operation of members in providing material for publication. He said he would be forced to the conclusion that members of the Association were incapable of providing material if the present state of affairs continued. He went so far as to say that if members did not make an effort to submit material, the Association could look elsewhere for both an Editor and Publisher. He stated, although both arduous and time-consuming, he enjoyed the work, but could not possibly produce something from nothing, and that if members did not co-operate during the coming year, the journal must cease publication.

Mr. President: Stated that Mr. Whillans had offered a challenge and that it was the duty of every member to submit material, however brief, for publication. He was sure that members had the ability, but persistently left it to the other person to contribute. He was sure Mr. Whillans would welcome news of different laboratories if nothing else, but now it was the duty of every member to take up that challenge.

Miss Byres: Suggested that individual problems sent into the journal might provoke some lively interest and useful instruction.

Intermediate Examination.

Mr. Whillans: Advised that applications should be in before August 20th. He hoped that as many as possible might sit this year. The date had been postponed until later in October, but that the Health Department would notify Hospitals of the final date. He wished to be released from the position of the Association examiner, as he had so many trainees in his own laboratory sitting. He considered it should be someone other than the Bacteriologist of the laboratory where the exam. was being held. No fee was being charged, but that candidates were required to pay their own fares.

Mr. President: Suggested Mr. E. L. F. Buxton to replace Mr. Whillans. This met with unanimous approval.

There being no further material for discussion, the business of the Association closed, Mr. E. L. F. Buxton moving a vote of thanks to the chair, which was accorded in a hearty manner.

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