Vol. 1.—No. 4. JANUARY, 1947

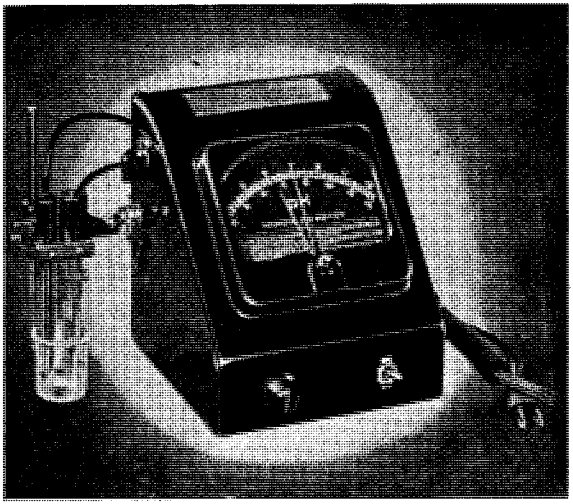
JOURNAL

of the

NEW ZEALAND ASSOCIATION OF BACTERIOLOGISTS

Published by the New Zealand Association of Bacteriologists (Inc.), Wellington, New Zealand

THE ACCURATE MEASUREMENT OF pH



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CONTENTS:

Communications regarding this JOURNAL should be sent to the Editor, Mr. D. Whillans, c/o Pathological Department, Public Hospital, Auckland, C.3.

All monies should be paid direct to the Secretary-Treasurer of the New Zealand Association of Bacteriologists (Inc.), Mr. S. O. Jarratt, c/o Pathology Department, Public Hospital, Palmerston North. Cheques should be made payable to the New Zealand Association of Bacteriologists (Inc.).

Subscription to this JOURNAL is 5/- per year or 1/6 per copy, post free. Members of the Association, no charge.

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NEW ZEALAND ASSOCIATION OF BACTERIOLOGISTS

Vol. 1. JANUARY, 1947 No. 4.

EDITORIAL

It is but half a laboratory lifetime since the Clinical Laboratory in New Zealand was in its infancy. We can remember the early days of insulin, the introduction of specific treatment for pernicious anaemia the rise of Clinical Biochemistry, the expansion of Haematology from a simple to an exceedingly complex study, the rise of the sulphonamides and the impact of penicillin, and we may well wonder what the second half will bring.

One thing is certain, and that is that no one in a senior position in a Clinical Laboratory can afford to neglect the onrush of science or can avoid a lifetime of study to keep abreast of scientific advances. But senior members do not just happen—they grow from junior members, and it is an urgent and essential duty to train our junior members now and especially to make use of those junior members commencing work in non-training laboratories in the best possible way so that we will be prepared for the expansion which must come. Then, having trained junior members, we must see that their inducement to remain in the Profession is in keeping with their responsibilities.

It was with these and many other points in their minds that the members of Council met in Wellington recently to receive reports from the special Committees set up at the last Annual Conference, and members would do well to ponder over the report of the meeting given elsewhere in this issue of the JOURNAL.

LABORATORY AIDS IN THE DIAGNOSIS AND PROGRESS OF TUBERCULOSIS

G. W. McKINLEY

(From the Bacteriological Laboratory, District Hospital, Waipukurau.)

This paper is based on the experience gained in laboratory work done for the Pukeora Sanatorium during the past 2½ years. This Institution is functioning as a Sanatorium, and not as a chest hospital. Cases are admitted from the whole of the North Island area, and consist of people who have been recommended as being suitable for sanatorium treatment. Most of them have passed through a general hospital prior to admission.

This paper sets out the routine laboratory procedure adopted in the primary investigation and follow-up of these cases.

Sputum:

1. *The Direct Examination:* On admission, each patient has a direct examination of the sputum on six successive days. The report consists of:

   1. The microscopic appearance of the sputum.
   2. A report on the number of pus cells present as determined by microscopic examination of the stained slide.
   3. The presence or absence of tubercle bacilli with a rough classification of the numbers present. Slides are reported as Positive or Negative, and the numbers of bacilli are classified as:

      Rare: 1 or less per 10 H.P. fields.

      Few: 1 - 10 per H.P. field.

      Numerous: 10 or more per H.P. field.

The microscopic appearance and report on the numbers of pus cells is of great value to the clinician. Specimens are classified as:

1. Purulent.
2. Muco-purulent.
3. Mucus.
4. Saliva

A series of Negative reports on specimens consisting solely of mucus or saliva is obviously not as valuable as negatives obtained on specimens of a purulent or muco-purulent nature. Of all direct examination positives, about three-quarters were obtained in purulent or muco-purulent material.

Cases producing purulent or muco-purulent sputum, and Z.N. Negative by direct and more sensitive methods, are worthy of further investigation to determine the presence of secondary infection, especially if the case is clinically and radiologically not typical of tuberculosis.

The Z.N. stained film is prepared in the usual way, great importance being attached to the selection of a satisfactory portion of the sputum. Variations of the original Z.N. method have been tried, such as counterstaining with picric acid, but our experience has been that there is no great advantage in adopting another method. This is probably a matter of personal preference, as we found that a picric acid counterstain was more trying on the eyes, when long periods have to be spent at the microscope.

Direct films are searched for a minimum of five minutes. During this time 500 microscopic fields can be thoroughly searched, and it is emphasised that the Direct Examination is purely a "screening out" test for fairly obvious Positives, the main purpose being to classify the cases into Direct Examination "Positives" and "Negatives." It is then necessary to further investigate the Negatives, and unnecessary concentration work is avoided on the Direct Examination Positives.

In addition to the six direct examinations on admission every patient has one monthly direct examination of the sputum for T.B. This is of value for two reasons:

First, the cases which have been consistently positive, if responding to treatment, will eventually become negative on the monthly direct examination. This is the first laboratory indication of progress, and these patients then have six direct examinations, on successive days. If these all prove negative then the investigation proceeds to more sensitive methods for the detection of tubercle bacilli. Second, it is of value in cases previously classified as Negative by direct examination, to determine if they remain negative by this method. It can happen that a case which has been negative may regress and produce a positive sputum, and this can sometimes be picked up in the monthly examinations.

At the discretion of the Medical Officer, any case may be investigated by means of six direct examinations on successive days, at a time when the doctor notices that the patient is producing an increasing amount of sputum. This increase may be due

to any one of a number of reasons, e.g., the common cold if prevalent throughout the Institution will often result in a marked increase in the number of cases found positive by direct examination.

Concentration and Culture Methods: (three-day collection of Sputum). Cases which have been Negative by direct examination on admission, or have become negative after being positive, are investigated by means of Concentration and Culture Methods. It is not proposed to enter into details of the technique of such methods, beyond stating that we have used the Petroff and Hank's Alum precipitation methods for concentration, with satisfactory results.

Culture Media used and found satisfactory are Lowenstein, Yolk enriched (Edson), modified yolk enriched, and Petragnani. For simplicity combined with satisfactory growth, modified yolk enriched is an excellent medium. From the description of the direct examination procedure it will be seen that cases proceeding to concentration methods are those producing either very few tubercle bacilli or else none at all. Therefore it is obvious that the concentration picture, as we find it, will not be so spectacular as that shown in a laboratory where all sputa are submitted to concentration without prior "screening out" of obvious positives. The point of importance here is that concentration films must be searched very thoroughly, and our procedure is to search films for 15 minutes before reporting as "Negative." Films are frequently found "POSITIVE" after 10 minutes or so of concentrated searching, and after the long time involved in the concentrating and preparation of the film it is obviously important to give really adequate time to the microscopic examination. Quite apart from the importance of the result to the patient and clinician, a hurried "Negative" report will be followed by further concentration involving a considerable amount of work, which possibly could have been avoided by adequate searching of the original film.

A case giving a positive concentration result will not have further concentrations for some little while—it will depend on his clinical and radiological progress. Those cases giving negative concentrations results will be followed up with further concentrations at the discretion of the Medical Officer concerned. The concentration method is of definite value in two ways:

1. It does determine a considerable number of positives which, although suspected on other grounds, would be bacteriologically negative.
2. Repeated Negative concentrations are much more reliable results than those obtained by direct examination only.

CULTURAL METHODS: All concentration deposits are cultured. Culturing is a more sensitive method again than examination of concentration films. We culture all positive concentration deposits, for the purpose of typing the tubercle bacilli. The negative deposits are cultured to attempt to obtain positive results, and those that are positive are typed.

Cultures have yielded positive results in numerous cases when concentration films have been negative, and we have not yet failed to grow tubercle from a deposit which has been positive in the concentration film. Practically all the tubercle cultivated has been of "human" type. This can be explained by pointing out that most of the cultural work is done on cases of pulmonary tuberculosis. Where there are lesions other than in the lungs, they are usually secondary to a lung condition. The only "bovine" types encountered have been in hospital cases and not from the Sanatorium.

GASTRIC CONTENTS: The examination of the Gastric contents is an important point in the detection of tubercle bacilli. This method is employed in cases which are producing minimal amounts of sputum, or none at all. When very small amounts of sputum are produced there is a tendency for this sputum to be swallowed instead of expectorated. Children are particularly likely to do this, and some adults will also swallow considerable amounts of sputum. The resting stomach contents are collected by means of a stomach tube on two mornings. The resulting fluid is concentrated and cultured in a similar manner to that employed for three-day sputa.

This is a particularly useful line of investigation for children and non-co-operative patients. We have found it an advantage to prolong the period of digestion with NaOH and use exclusively a medium containing malachite green for culturing gastric contents. This seems to obviate difficulties encountered due to contamination of gastric contents cultures with organisms resistant to the NaOH treatment.

Animal Inoculation:

This examination is run parallel with cultures, but cannot be done routinely on all concentrations, as this would involve an extremely large amount of work and a very large supply of animals. Inoculations are, therefore, restricted to selected cases; first, cases that have some clinical evidence of T.B. and have not yielded a positive by other methods,; and, secondly, in cases that are nearing the point of discharge from the Sanatorium. As a point of interest, and bearing in mind that the animal inoculations only follow after repeated attempts at obtaining positives by other means, we find that animal and culture results are running fairly even.

Faeces:

The examination of faeces for tubercle is undertaken:

(a) As an alternative to examination of the gastric contents.

(b) To aid in the diagnosis of tuberculosis of the bowel.

It is a more tedious procedure than examination of the gastric contents, and our experience has been that it yields no more information than gastric concentration.

With regard to the diagnosis of T.B. of the bowel, it is difficult to come to a conclusion as to the significance of T.B. in the faeces. In open cases of pulmonary T.B., tubercle bacilli can be demonstrated in the faeces without there being any clinical evidence of bowel involvment, and have presumably been from swallowed sputum. In a case where Gastric contents are repeatedly negative, and the faeces positive, then possibly some deductions can be made. Material obtained directly from a lesion in the bowel will give a more reliable result than examination of the faeces. However, in young children, where there is difficulty in obtaining sputum or gastric contents, the examination of the faeces is of value.

Pleural Effusions:

You are all quite familiar with the usual methods of examining pleural fluids for T.B. The only point to be made here is the extremely satisfactory results obtained from the culture of pleural fluids, but it is necessary to examine large amounts of the fluid, up to 100 ml. being necessary for satisfactory examination. The few c.c. of fluid so often submitted for examination is very often inadequate, and over the last $1\frac{1}{2}$ years, since we have introduced the method of repeatedly examining large quantities of fluid, we have not failed to establish the bacteriological aetiology in any Sanatorium case with pleural effusion.

A point of interest is that in the "Lancet," February 9, 1946, an article points out that it is necessary to aspirate large amounts of fluid to obtain good results, and this article also emphasises the superiority of cultural methods over animal inoculation. The cytology of pleural fluids is too large a question to be dealt with here, and possibly will be the subject of a later article, but the cytology of the pleural fluid is by no means predominantly lymphocytic at every stage, as is often stated. There seems to be a definite connection between the polymorph lymphocyte ratio and the later demonstration of tubercle bacilli, but much more work remains to be done on this subject.

An easy and fairly accurate estimation of the increasing or decreasing cellularity of a pleural fluid can be obtained by centrifuging a specimen in a graduated centrifuge tube for a fixed time at a fixed speed. The deposit is reported in terms of "percentage sediment." It gives more definite information when combined with the differential count of the cells than does the differential count alone, and the Sanatorium medical officers have found this simple test to be of some value.

The Mantoux Test:

Again, this test is quite familiar to you all. The only point of interest is that it is sometimes overlooked in the investigation of possible cases of T.B. A negative result is of definite value. In Sanatorium work old tuberculin is preferred to P.P.D. as the great difference in 1st and 2nd strength P.P.D. (2nd strength 250 times stronger) can result in too severe reactions in dealing with Sanatorium cases. Old tuberculin in dilutions 1 in 100,000, 1 in 10,000, 1 in 1,000 and sometimes 1 in 100 is used.

The Blood:

The Sedimentation Rate (S.R.): The most widely used test is the S.R. We use the Wintrobe method. Each patient has a monthly S.R. and it is used chiefly as an indication of progress rather than as a diagnostic test. Cases similar clinically will often yield very varying S.R's, and most importance is attached to comparative studies of the S.R. Correction for anaemia is done on cases showing a S.R. of over 20 mm. in 1 hour Both observed and corrected rates are reported and the clinician makes his own interpretation. It is still regarded as a useful laboratory procedure.

The Examination of the Peripheral Blood:

This is done only in selected cases. During 1944 all Sanatorium cases had the blood examined as follows:

(a) Differential white count
(b) Arneth count.
(c) von Bonsdorff count.
(d) Houghton's index.

As far as we know this was the first extensive work done in N.Z. on the blood changes in active or recently active tuberculosis The work was done on the lines set out by Houghton in his original article in "Tubercle," November, 1935, and we refer you to this article for full details.

The result of a year's work, entailing many thousands of blood examinations, was that the blood picture is of definite value in prognosis.

Conclusions: Progress can be accurately assessed and clinical breakdown anticipated by serial blood examinations. The

blood picture is also of assistance in selecting cases for special treatment.

The Urine:

All patients have a routine laboratory examination of the urine on admission. Early cases of renal tuberculosis have been picked up by this means. Any pathological feature reported in the original examination ensures that a more extensive investigation will follow.

The 24-hour specimen is not recommended as a means of demonstrating tubercle. We prefer to examine the last specimen at night and the first morning specimen. This is more satisfactory for cultural work, and from the point of view of convenience. Usual concentration methods are adopted. T.B. in the urine is now regarded as always being pathological, even in the absence of clinical features. The theory of "excretory bacilluria" is no longer tenable, and serial sections have demonstrated kidney lesions in cases of "symptomless tuberculous bacilluria."

This paper was read at the Second Annual Conference of the Association held in Palmerston North in August of this year.

STAPHYLOCOCCI IN INDUCING GROWTH OF H. INFLUENZAE

M. A. TAYLOR

(*From the Pathology Department, Christchurch Hospital*)

It was of interest in following up two cases of Influenzal meningitis that in the first case the first four daily specimens of cerebrospinal fluid appeared to give satisfactory cultural results with moderate sensitivity to penicillin.

Several doses of penicillin were given the child intrathecally, and the fifth specimen of cerebrospinal fluid produced a few colonies of *H. influenzæ* close to the *Staphylococcus aureus* control, but nowhere else. This gave a false impression of sensitivity, as in reality it was a lack of the symbiotic organism.

Therefore in culturing specimens in these cases, a *S. aureus* which was insensitive to penicillin was used to zig-zag across the media close upon the penicillin patch in order to propagate colonies of *H. influenzæ* and establish the true degree of penicillin sensitivity. This proved successful in that the colonies of *H. influenzæ* appeared along the line of the *S. aureus* and showed moderate sensitivity to penicillin.

It is interesting to note that in the first case, after prolonged penicillin therapy, the organism showed complete insensitivity to penicillin.

COUNCIL MEETING, NOVEMBER, 1946

A Council Meeting was held in the rooms of Dr. P. P. Lynch, Kelvin Chambers, The Terrace, Wellington, on Saturday, November 30th, at 10 a.m.

There were present Mr. E. L. F. Buxton (Chairman) and Messrs. N. T. Ellison, J. T. G. Peddie, D. H. Adamson, G. W. McKinley and D. Whillans. The Chairman opened by congratulating the Council members on their fine effort in attending the meeting in view of the long travelling time involved in most cases.

After a number of routine matters had been dealt with the following members were elected to the Association:

Senior—Mr. M. Morris, c/o Medical School, Dunedin.

Junior—Miss B. Broughton and Mr. A. Harper, Kew Hospital, Invercargill.

Mr. G. B. Kiddle, c/o Dr. P. P. Lynch, Wellington.

Mr. D. H. Adamson, convenor of the Committee set up at the last Annual Conference on Salaries, presented the report of his committee. After a prolonged discussion it was decided to write to the Director-General of Health and the Secretary of the Hospital Boards' Association, copies being sent to the Directors of all Clinical Laboratories. The wording was thus:—

"In view of the increasingly high standard of work being demanded of Professional Staffs in Clinical Laboratories in New Zealand, and in consideration of the increased cost of living, my Association submits for your consideration and approval the following salary scale:

Cadets—

First year, £130.
Second year, £170.
Third year, £270.

Cadets living away from home to receive a boarding allowance of £78 during the first two years.

Trainees—

First year, £295.
Second year, £320.

Qualified Bacteriologists—

(a) On qualifying, £450, rising by £50 p.a. to £600.

(b) If in charge of a department during this time, £50 extra.

(c) Bacteriologists in Laboratories not directly controlled by resident Pathologist and Senior Supervisors in Laboratories controlled by a resident Pathologist.

Minimum £650 to Minimum £750, to rise from the lower to the higher rate in two years. Thereafter the salary to be increased in accordance with the importance of the position held.

My Association considers that such a scale is necessary to encourage the entrance of suitable candidates into, and the retention of those already engaged in, the Profession."

The report from the Committee on the Syllabus of Training for Hospital Bacteriologists was then presented by Mr. N. T. Ellison, convenor, and discussed at length by the Council. It was decided to write to the Director-General of Health in the following terms, copies being sent to the Directors of all Clinical Laboratories, and to the Secretary of the Hospital Boards' Association:—

"My Association feels that the Syllabus of training for Hospital Bacteriologists at present in force does not cover the scope of work required and submits the following Syllabus for your consideration and approval

SUGGESTED SYLLABUS OF TRAINING FOR HOSPITAL BACTERIOLOGISTS FOR THE CERTIFICATE IN BACTERIOLOGY AND CLINICAL PATHOLOGY

1. **The Preparation, Operation and Maintenance of Laboratory Equipment:**
   Microscope, including dark ground condenser and micrometers; colorimeter; hydrogen ion and photoelectric apparatus; microtome; incubators; autoclaves; thermo-regulated apparatus; stills; filters; anaerobic equipment; laboratory requisites.
2. **The Preparation of Reagents, Etc.:**
   Stains; reagents; normal, standard, molar, and buffer solutions; culture media; preparation of parenteral solutions.
3. **Bacteriology:**
   General principles of bacteriology and epidemiology; the systematic study of micro-organisms and some knowledge of viruses, particularly the pathogens of man; their biological classification, morphology, physiology, metabolism and nutrition. The isolation of micro-organisms in pure culture and their identification. The bacteriological analysis of air, foods, water and soil.

4. **Immunity:**
General principles of immunity and serology. The function of antigens, antibodies, complement, agglutinins, opsonins and precipitins. Widal reaction. Anaphylaxis. The production of immune serum, determination of titre and absorption of antigenic factors. Specific and non-specific antigens. The preparation of reagents for the Wasserman and Kahn tests. The preparation and use of vaccines and fluids for skin sensitivity tests.
5. **Antibiotics:**
The dispensing, storage and distribution of antibiotics and their methods of assay. Determination of the resistance of organisms to penicillin and to the sulphonamides. Standard technique for the testing of disinfectants.
6. **Haematology:**
Collection of specimens; origin and development of cells; enumeration of erythrocytes, leucocytes, platelets and reticulocytes; examination of stained films (including bone marrow), differential counts and blood parasites. The estimation of haemoglobin, sedimentation rate, packed cell volume, and blood indices. Fragility test; coagulation, bleeding and prothrombin times. Heterophile antibody tests. Blood grouping, Rh factor and blood bank.
7. **Parasitology:**
A knowledge of the common parasites infesting man, their identification and transmission.
8. **Examination of Body Fluids and Excreta:**
Cytology, bacteriology and chemistry, where applicable, of puncture fluids, pus, sputum and excreta.
9. **Biochemistry:**
Qualitative tests and quantitative estimations where relevant for the following:—
   (a) **Blood**
   Sugar, T.N.P.N., urea, uric acid, calcium, phosphorus, phosphatase, chloride, protein, bile, alkali reserve.
   (b) **Cerebrospinal Fluid**
   Sugar, T.N.P.N., chlorides, protein, colloid gold.
   (c) **Urine**
   Reducing substances, ketone, chloride, bile and its derivatives, urea, albumin, blood pigments.
   (d) **Faeces**
   Occult blood; fat and fatty acids.

   Tests for renal efficiency, sugar tolerance, liver and gastric function, and enzyme activity. Analysis of calculi.
10. **Histology:**
The routine preparation of tissues for histological examination and the preparation and mounting of museum specimens.

11. Laboratory Animals:

A practical knowledge of the inoculation, examination, propagation and feeding of laboratory animals.

The Secretary then read the report from the Committee on the proposed Intermediate examination to be held at the end of three years' training. (Mr. I. W. Saunders, Convenor.)

The syllabus for this examination was discussed at length, but was finally referred back to the original Committee with the suggestion that it be brought into line with the proposed Syllabus of Training for Hospital Bacteriologists. (It is suggested that this examination be open to all training under a qualified Bacteriologist or under a Pathologist, the aim being to stimulate junior workers in both types of laboratory as well as to provide opportunities which are now completely lacking for junior workers in laboratories under the control of a Hospital Bacteriologist. It will be noticed that it is proposed to increase the period of Cadetship to three years and cut the Traineeship to two years. It is further recommended that, in making appointments to Training Laboratories, preference should be given to those who have completed their third year and passed their Intermediate examination in laboratories under the control of a Hospital Bacteriologist.)

The question of Prize essay was then dealt with, and the Council allocated the sum of £2/2/- to be competed for by Junior members of the Association under the following conditions:—

(1) The Essay shall be the unaided work of a member who is a Junior member of the Association at the time of submitting the Essay.

(2) The Essay shall be in the hands of the Secretary of the Association not later than May 31st, 1947.

(3) The Essay shall be unsigned, but shall be accompanied by an enclosure giving the name and address of the entrant.

(4) The value of the prize for the 1947 competition shall be £2/2/- and shall be presented, together with an appropriate Certificate, at the third Annual Conference of the Association, 1947.

(5) The decision of the Judge shall be final.

Conference, 1947:

The tentative date for the Conference, 1947, was fixed for Friday and Saturday, July 18th and 19th, 1947, and the place as Christchurch. It was stated that the preliminary work for a satisfactory Conference was well in hand.

The meeting closed at 5.30 p.m.

REFERENCES TO RECENT LITERATURE

The use of *sodium azide* in the isolation of *gram-positive cocci.* Am. J. Clin. Path. 1946. *16.* 123. (Appears a satisfactory solution, but not tried yet). Apparatus for determination of *specific gravity of multiple specimens of urine.* Am. J. Clin. Path. 1946. *16.* 132. (Construction and working appear simple.) A simple method of determining *specific gravity of small samples of urine.* J. Lab. & Clin. Med. 1946. *31.* 934. (Similar in principle to copper sulphate method and can be used for other fluids of low protein content.) A substance in human serum inhibiting *staphylocoagulase.* J. Path. Bact. 1946. *58.* 187. (Of importance in the staphylococagulase test.) Laboratory findings in clinical *Dysentery* in M.E. Force. J. Path. Bact. 1946. *58.* 237. (A brief summary of strains of dysentery organisms isolated. The percentage of isolations of dysentery organisms tends to be misleading. In one of the N.Z. General Hospitals in Egypt it was considered to be the result of poor technique, or of previous administration of even one dose of sulphaguanidine, if isolations were below 80% from microscopic "bacillary exudates.") Resolutions adopted at the International Conference on the *Standardisation of Penicillin.* Bull. of Health. Orgn. Geneva. 1945/6. *12.* 2. (Includes methods of assay, etc.) A dropping device for cylinder plate *assay of penicillin.* Science. 1946. *104.* 275. (Pointing out variations resulting from inaccurate placement. As described elsewhere and adopted in Christchurch, the following method for routine tests of organisms was found to be good. Cut circles of blotting paper with a filing punch, dry-sterilise and moisten with penicillin solution, 500 units per cc. Dry for a few hours at 37° C. Store in a refrigerator. If contamination and moisture are excluded this will remain potent for weeks. Use as control the special Oxford S. aureus.) Agar technique for arresting movement of *protozoa.* Science. 1946. *104.* 227. (The speed of movement can be varied by this method.) Saccharose fermenting *diphtheria bacilli.* Science. 1946. *104.* 252. Acute inflammation due to *diphtheroid bacillus.* Edinbgh. Med. J. 1946. *2.* 83. A haemolytic *corynebacterium* resembling C. ovis and C. pyogenes in man. J. Infect. Dis. 1946. *1.* 69.

(It is of interest that several strains of Corynebacterium from throats and wounds were found in Italy in 1944-5. These at first fermented glucose only, and not till the 5th subculture did they ferment saccharose. These strains were usually not morphologically or colonially typical, and they appeared to be non-pathogenic to man and guinea pigs. They were probably some of the 44 strains of diphtheroids listed by Topley and Wilson (1946).; Infectious *lymphocytosis.* Canadian M. Ass. J. 1946. *55.* 133. (Clinical and laboratory findings and a short summary of the literature.) A comparison might be made with atypical mononucleoses in Egypt and particularly in Italy. There were several clinical and blood picture types:—e.g., W.B.C. 20,000 with lymphocytes 75% and about 3% atypical mononuclears, W.B.C. 13,000 with lymphocytes 19% and about 12% of atypical mononuclears, W.B.C. 6,000 with 45% lymphocytes and about 3% atypical mononuclears. The abnormal cells were often large or

small lymphocytic types, deeply basophilic, some with unstained vacuoles. Sometimes they appeared of monocytic series. The majority of typical cases showed 10-15% of these abnormal cells. The Paul-Bunnell test was consistently negative.) *Liver function* tests. Am. J. Clin. Path. 1946. *16.* 426. (A consideration of principles and the significance of the various tests.) The future of *medical technology.* Am. J. Med. Tech. 1946. *12.* 146. (An interesting comparison with our own Association. The standard of education appears rather high for our present facilities for training and requirements and for our salary scales. c.f. following article.) Questions for written examination for registration of American *Medical Technologists.* May and Oct. 1945. Am. J. Clin. Path. 1946. *16.* 138. (The papers are well designed and comprehensive and are worthy of a Trainee's attention. It would appear that most N.Z. five-year Trainees would attain 70%.)

NEW BOOKS:

Manual of Tropical Diseases.—Prepared under the auspices of the National Research Council of America. (The volume covers practically all tropical and subtropical diseases and deals extensively with their aetiology, control and treatment. The book covers a wide range, and is well illustrated, but much of it is only of academic interest as far as N.Z. is concerned. There is a technical section at the end of the volume, but it is short and describes many procedures which will only very rarely be needed in this country.)

Pathology of Tropical Diseases.—An atlas. J. E. Ash, Col., M.C., U.S.A. and Sophie Spitz, M.D., C.S., A.U.S. (The material dealt with is from the American Army in the tropics as well as some selected by the National Research Council of America. It is a brief, practical outline of the subject from the pathology side, with 941 good illustrations, 15 being in colour.)

D.H.A.

Penicillin in wound *exudates.* Florey, M. E., Turton, E. C., and Duthie, E. S.; Lancet. 1946. *2.* 405. (An interesting account of the method for preparing wound exudates for the assay of their penicillin content, and an analysis of the factors influencing such assays.) *Medical photography.* Hansell, P., Lancet. 1946. *2.* 296 The Hospital *Photographic Department.* Stanford, B., Lancet. 1946. *2.* 299. (Here, indeed, would be the medical photographer's paradise.) Semiquantitative estimation of *bilirubin in the urine* by means of the barium-strip modification of Harrison's test. Watson, C. J., and Hawkinson, V. J. Lab. Clin. Med. 1946 *31.* 914. (Chromatographic adsorption on barium chloride impregnated strip and the testing of the coloured band with Fouchet's reagent) The *methylene blue test for bilirubinuria.* Stokes, G. D., Gambill, E. E., and Osterberg, A. E. J. Lab. Clin. Med. 1946 *31.* 924. (Showing spectrophotometrically that the colour which results when methylene blue is added to urine is not due to any specific chemical reaction but is due to blend of colours. Was about to do the same thing with J.B.B., but saved the trouble.) The basis of improved *electronics.* Considine, D. M., and Eck-

man, D. P., J. Chem. Education. 1946. *23*. 274. (Interesting account of the progress of laboratory electronic aids, particularly new self-balancing potentiometer making use of A.C. converter which changes small D.C. currents to A.C., making amplification easy.)

D.W.

EXTENSIONS TO THE PATHOLOGY DEPARTMENT, CHRISTCHURCH

R. BRIDGER

(From the Pathology Department, Christchurch Hospital.)

Adopting new and improved ideas in laboratory construction, the extensions of the Pathology Department in the Christchurch Public Hospital are now complete.

At the cost of about £9000 they include a new Animal House, with adjacent Servicing and Inoculation rooms, a new Museum and Specimen-mounting room.

The Animal House faces north to get the sunshine through a maximum window space—a feature of all the new rooms—for the 60 rabbits and 90 guinea pigs housed therein. Steam heating throughout takes care of winter conditions. The cages are constructed on a new pattern, two feet square, opening back and front, and laid on railings six inches above sloping concrete shelves to facilitate the disposal of waste. Steam sterilisation in the adjoining servicing room is provided for cages, etc. This also contains stalls for wet and bins for dry food.

The inoculation room has stainless steel benches, and central operating table and is equipped with an instrument steriliser. A hoist on the landing outside has a travelling block and tackle for moving food into the animal room.

The Histology Laboratory is a large corner room with surrounding lino-covered benches on wall brackets and with stainless steel sinks. Centrally are two benches for the Autotechnicon and the electric microtome knife sharpener, with provision for freezing microtome. A reception desk for specimens is inside the door from whence they go straight to the specimen alcove, where there is also a small lift for specimens from the autopsy room below. A double sink has been installed, one compartment being for washing specimens in running water. This alcove also incorporates the museum mounting with special benches and shelves for glassware. Provision has also been made for the refrigeration of specimens for demonstration and for further reference,

Fluorescent lighting is installed over the specimen bench.

The museum has much improved floor-to-ceiling shelves, compartmented and arranged in alcoves, each being lit by fluorescent lighting. In here is a space with a built-in blackboard and X-ray viewing box for teaching students.

Loud-speaker intercommunication as well as telephonic extension completes the summary of features. The extensions have been designed with a view to the future as well as to relieving the congestion of very crowded conditions and allowing expansion in the main laboratories where alterations are being made.

Acknowledgment:

I would like to thank Dr. D. T. Stewart for permission to publish this description of the new wing, most of which was designed by him.

HERE AND THERE

CHRISTCHURCH:

Marriage.—Harry Edwin Foster, to Ngaire Lorna Butland, at Christchurch, on 30th of August, 1946.

New wing of the Pathology Department has been opened. Described fully in this issue.

WELLINGTON:

Council Meeting, on Saturday, November 30th, 1946. This was an important meeting, and a full report will also be found in this issue.

AUCKLAND:

Resignations.—Miss C. W. Wilson has left the staff of the Auckland Hospital Laboratory to be married before Christmas; Miss M. M. Spraggs to look after her mother in Hamilton; and Mr. L. G. Eccersall, who passed the Department of Health's Examination this year, to join the staff of the Waikato Hospital Laboratory.

Appointments to the Auckland Hospital Laboratory Staff to fill the vacancies created are: Mr. D. J. Philip, who comes to us as a matriculated student from Mt. Albert Grammar School; and Mr. W. E Browne, of Auckland University College, who is awaiting with interest the result of his final examinations for B.Sc.

The deadline for articles for the April 1947 issue of the JOURNAL will be February 22nd, 1947. Material for advertisements will be received up to March 8th, 1947.

The *Editorial and Printing Staffs* of this JOURNAL wish subscribers the Compliments of the Season.

Printed and Published by D. Whillans, 31 Woodside Rd., Mt. Eden, Auckland, S.1, for the Association of Bacteriologists (Inc.), whose Registered Office is the Pathology Dept., Public Hospital, Wellington.

A LETTER FROM THE EDITOR

C/o Pathological Dept.,
Public Hospital,
Auckland, C.3.

Dear Members,—

I wish to acknowledge with grateful thanks the following donations to the Publishing Fund opened by an advertisement in last issue.

	£	s.	d.
Dr. E. F. Fowler, Auckland	5	5	0
Messrs. N. M. Peryer, Ltd., Christchurch	5	5	0
Mr. A. F. Bell, Auckland	2	2	0
Mr. H. L. Haden, Whangarei		10	0
Mr. P. H. Curtis, Auckland		10	0

The purchase of a printing press and the publication of a JOURNAL at the commencement of the Association's existence has placed a severe strain on the finances of the Association. Will you show your appreciation of your JOURNAL by sending a donation, however small, to:—

The Treasurer, Publication Fund,
Mr. S. O. Jarratt, c/o Pathology Dept.,
Public Hospital, Palmerston North.

Cheques should be made payable to the "New Zealand Association of Bacteriologists (Inc.)."

I would like to remind members also that, while finance may be the sinews of the publication, articles and materials for publishing are its very life blood.

Yours sincerely,

D. Whillans,
Editor.