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# JOURNAL

## OF THE NEW ZEALAND ASSOCIATION OF BACTERIOLOGISTS

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# PASTEURIZATION OF MILK

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*(Winner, Technical Section Junior Essay Competition)*

Until recently both raw and pasteurized milk has been available to the Christchurch public, but as a result of bacteriological investigations carried out on samples of bottled raw milk by the staff of the Pathology Department, Christchurch Hospital, the Department of Health has enforced a ban on the sale of raw milk until such time as all dairy herds on town supply are free of disease, and the milk is safe for human consumption. Many people have refused to drink pasteurized milk, the so-called "devitalized" product of today, and a Milk Consumers' Protection Society has been formed, its chief aim being to make raw milk once more available to the large number of people who request it. Unfortunately, many prefer to remain ignorant of the dangers of drinking raw milk and refuse to accept any statements, even those based on laboratory findings, of the gross contamination which has made our raw milk supply so dangerous.

The pathogens most commonly found in raw milk in New Zealand are Brucella abortus, the causative organism of abortion in cows and undulant fever in man, and bovine Mycobacterium tuberculosis. The frequency of infection of the milk with Br. abortus is greater than that with the tubercle bacillus, due chiefly to the fact that the udder is more often involved in contagious abortion than in tuberculosis. Acute or chronic mastitis, while generally due to non-pathogenic streptococci, may be caused by Streptococcus pyogenes, responsible for scarlet fever and septic sore throats in man. Salmonellae and coliform bacilli may also be present in raw milk, due to faecal contamination.

The object of pasteurization is to destroy the various pathogenic and non-pathogenic organisms that may be present and to bring about this destruction with the least possible alteration to the physical, chemical and nutritional properties of the milk.

The most satisfactory method of pasteurization and that which is carried out at a Christchurch milk treatment station where much of my information has been obtained, is known as the high temperature short time Method, with the milk being heated at 162°F. (72.2°C.) for 15 seconds and then rapidly cooled. There is a continuous gravity flow of the milk, in a film one-hundredth of an inch thick, over pipes heated at 162°F., with an instantaneous transfer of the heat to the milk. It takes exactly 15 seconds for the milk to flow over these pipes, before passing over cold water-filled pipes, and finally over ammonia-filled pipes, a procedure

which takes a further 30 seconds, with the temperature of the milk dropping to 40°F. An electronic temperature control operates with the pasteurizing plant, and an automatic device diverts the flow of milk back into the holding vats of raw milk should the temperature fluctuate.

Myco. tuberculosis is the most heat-resistant pathogen common in raw milk, and pasteurization must therefore, centre around complete destruction of this organism. Kay and Graham, in 1935, found that phosphatase, an enzyme naturally occurring in cows' milk, is slightly more resistant to heat than the tubercle bacillus, and it has since been established by experiments that milk giving a negative phosphatase test may be assumed to have been adequately pasteurized.

The principle of the Aschaffenburg and Mullen Test for phosphatase, which is performed at hourly intervals on specimens of pasteurized milk at the treatment station, is that phosphatase is able to liberate p-nitrophenyl from buffered disodium p-nitrophenyl phosphate, the p-nitrophenyl, yellow in alkaline solution, being a direct indicator of enzyme activity. The test is performed as follows:

1 ml. milk is added to 5 ml. of a disodium p-nitrophenyl phosphate solution which has been buffered with sodium carbonate and sodium bicarbonate, and the tube is placed in a covered water bath at 37°C. for 2 hours. The liberation of p-nitrophenyl gives a yellow colour which is compared with a boiled milk (phosphatase free) standard which has been similarly treated, in a Lovibond comparator, the result being recorded in Lovibond units.

| | | | |
|---|---|---|---|
| 0-6 | Lovibond | Units | : Pasteurization completely satisfactory. |
| 6-18 | ,, | ,, | : Pasteurization adequate. |
| 18-36 | ,, | ,, | : Slight errors in pasteurization or small addition of raw milk. |
| Over 36 | ,, | ,, | : Major errors in pasteurization or addition of raw milk. |

This test is extremely sensitive, and can detect the addition of 0.2% raw milk, perhaps due to some leakage in the pasteurizing plant.

The methylene blue reduction test is carried out on pasteurized milk to determine the number of organisms present, and is of value in judging the keeping quality of the milk. Using sterile pipettes and tubes, 1 ml. methylene blue solution is added to 10 ml. milk, and the tube placed in a covered water-bath at 37°C. Decolourisation of the methylene blue should not take place until 4-6 hours have elapsed—if it occurs before this, the number of bacteria present in the milk must be high. This test is often car-

ried out on raw milk and the farmers paid according to the cleanliness of the milk, as indicated by the results.

Coliform counts are also carried out on samples of pasteurized milk, particularly on the first milk which passes over the machines and is pasteurized each day. 1 ml. of milk is added to melted violet red bile agar (Difco) of pH 7.4 mixed, allowed to solidify and incubated for 24 hours at 37°C. If the plant has been satisfactorily cleaned and the milk adequately pasteurized the coliform count should be nil, and the presence of these bacilli points to a possible leakage of raw milk into the pasteurized supply.

The three tests I have just mentioned are performed daily in the laboratory of the milk treatment station, and suffice to maintain a strict control on the efficiency of the pasteurization.

For some years the Department of Health inspectors have sent samples of bulk raw milk to the Pathology Department for testing for Myco. tuberculosis and Br. abortus, and at present tests are also being conducted on pasteurized milk, mainly as a result of public insistence, to show that pasteurized milk is free of these pathogens but unfortunately these results are not yet to hand. Guinea-pig inoculation is the method employed, and is carried out as follows: Each milk sample is thoroughly mixed, and 10 ml. is centrifuged at 3,000 r.p.m. for 10 minutes. Two slits are made in the cream layer with a sterile platinum loop, and the skim milk is decanted. The cream and deposit are then mixed and about 0.5 ml. is injected intramuscularly in the inguinal region of the hind leg of a guinea-pig. Eight weeks after inoculation each guinea-pig is killed, a specimen of blood obtained for Br. abortus agglutination tests, and the inguinal glands and spleen examined macroscopically for the presence of tuberculous lesions or signs of Br. abortus infection (see Figure 1). Enlarged or obviously infected glands are removed and films made, stained by the Ziehl-Neelsen method, and examined for Myco. tuberculosis. If microscopic findings are negative the glands are macerated, concentrated with trisodium phosphate solution, incubated overnight at 37°C., and neutralized with 25% hydrochloric acid. They are then cultured on to Lowenstein Jensen medium and incubated at 37°C. Positive cultures may be found within several weeks but negative reports are not issued until eight weeks have elapsed.

Cultures of splenic tissue for Br. abortus under prescribed conditions, using a 10% carbon dioxide atmosphere have so far been unsuccessful, but the agglutination tests have been found to be quick and reliable. Several dilutions of the serum in normal saline are made, an equal volume of Br. abortus antigen is added to each tube, and all tubes are placed in a 37°C. water-bath for 24 hours. This is an American recommendation and one which we have

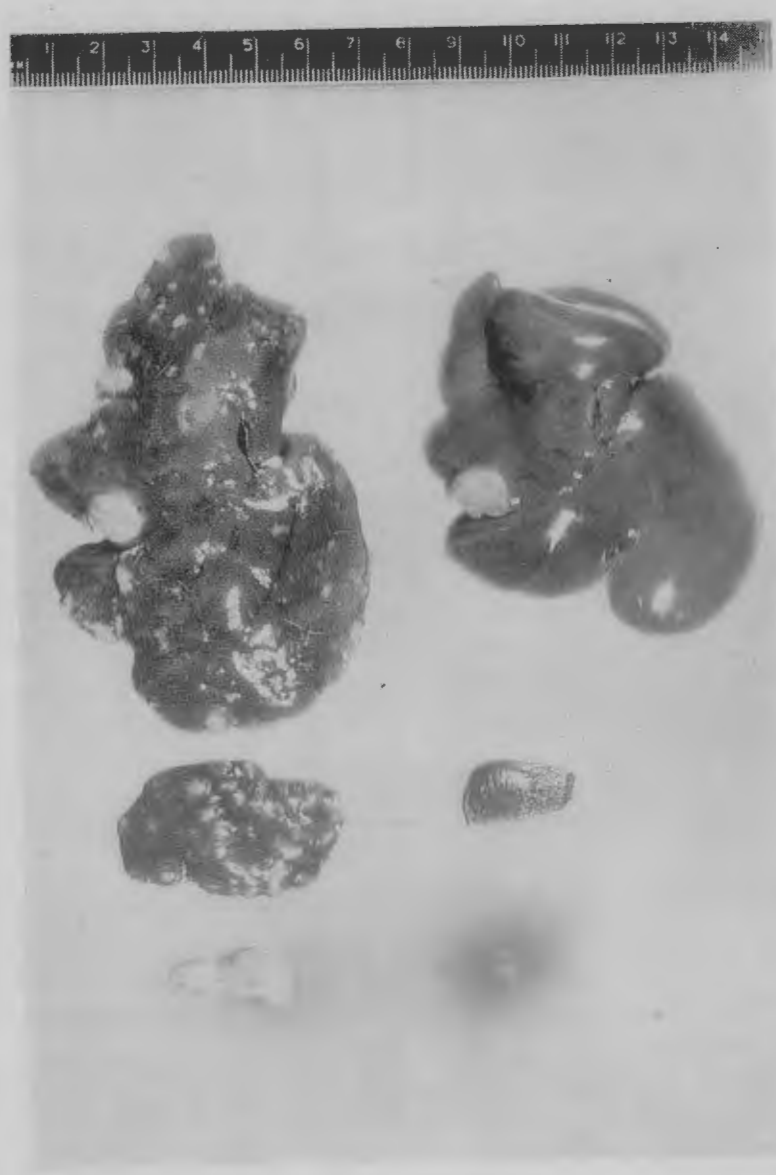

*Fig. 1: Diseased liver, spleen and inguinal gland compared with normal.*

found most satisfactory as higher titres are obtained. Titres over 100 are regarded as positive, and on one occasion a titre of 40,960 was demonstrated.

Over the past two weeks a brucella ring test has also been performed on each sample of raw milk received, and although numerous positive results have been obtained (11 positive out of 16) we are unable to correlate the results with those of the guinea-pig inoculation until autopsies are carried out. The test is simple to perform and consists of the addition of 1 drop of a haematoxylin stained Br. abortus antigen to 1 ml. milk in a small tube ("Wasserman" tube). The tube is then inverted several times to ensure thorough mixing of the contents, and is placed in a water-bath at 37°C. for 1 hour. The presence of Br. abortus antibodies in the milk causes agglutination of the bacterial antigen, and the clumps of agglutinated bacteria adhere to the fat globules, and rise to form a blue cream layer, while the rest of the milk remains white. If no antibodies are present the stained bacteria remain suspended in the milk, which remains blue, and a white layer forms on top.

Results of the guinea-pig inoculations with raw milk, performed over the last three years, are as follows:

| Year | No. of Guinea-pigs Inoculated and Examined | Positive Br. abortus | Positive Myco. tuberculosis |
|---|---|---|---|
| 1955 (7 months) | 24 | 6 | none |
| 1956 (3 months) | 82 | 46 | 1 |
| 1957 (4 months) | 80 | 39 | 9 (4 died of tuberculosis within 4 weeks of inoculation) |

All the guinea-pigs were supplied by the hospital animal farm, and no tuberculosis or undulant fever has ever been known to occur in this stock. The sera from a number of uninoculated guinea-pigs were tested for Br. abortus, and all were negative.

From the above results it can be seen that the incidence of tuberculous infection of the raw milk supply has greatly increased this year, while almost 50% of the samples have contained Br. abortus. All samples have been drawn from milk which was bottled, capped, and ready for distribution to the public, somewhere in the vicinity of 3,000 gallons per day, so it can be assumed that a large number of people consumed the heavily infected milk.

Government herd testers are performing Mantoux tests on all

dairy cows in Canterbury at present, and any reactors are immediately slaughtered, and the farmer compensated accordingly. Br. abortus infection is harder to detect as the agglutination test is the only satisfactory diagnostic aid available, but vaccination of all herds against Br. abortus will do much to lower the incidence of this disease.

Because no disease is exclusively milk-borne, and because both tuberculosis and undulant fever generally occur in the human subject after a long incubation period, the direct relationship between the infection and the vehicle by which it was carried is masked, and the origin of most cases remains undetermined. No distinction exists clinically between tuberculosis of bovine origin, and that of human origin, and laboratory tests are not always of value. Many cases of undulant fever are entirely overlooked, due possibly to the mildness of symptoms although they may recur repeatedly, and because agglutination tests, usually the only conclusive evidence of such an infection, are not performed.

In conclusion, may I point out that although it perhaps appears from this essay that the incidence of Myco. tuberculosis and Br. abortus in dairy herds is particularly high in Canterbury this is not actually so, and in some North Island dairying areas both diseases are more prevalent. Canterbury is, however, one of the few areas in New Zealand where raw milk is supplied to the public and routine sampling and testing of the milk has therefore been necessary. Because of the frequency of disease in cattle, the risk of contamination from human and other sources, and the fact that milk is an excellent fluid medium for bacterial growth, the consumption of raw milk at any time is potentially dangerous, and pasteurization is the only effective means of eliminating this danger.

*ACKNOWLEDGEMENTS*

I wish to acknowledge the assistance of Mr J. Wright, Chief Chemist to the Christchurch Milk Company Ltd., Mr G. Chapman, Health Department Inspector, and permission of Dr. G. C. T. Burns to publish results of tests carried out in the Pathology Department, Christchurch Hospital.

# THE DIAGNOSIS OF HAEMORRHAGIC DISORDERS

## METHODS USED AT AUCKLAND HOSPITAL CENTRAL LABORATORY

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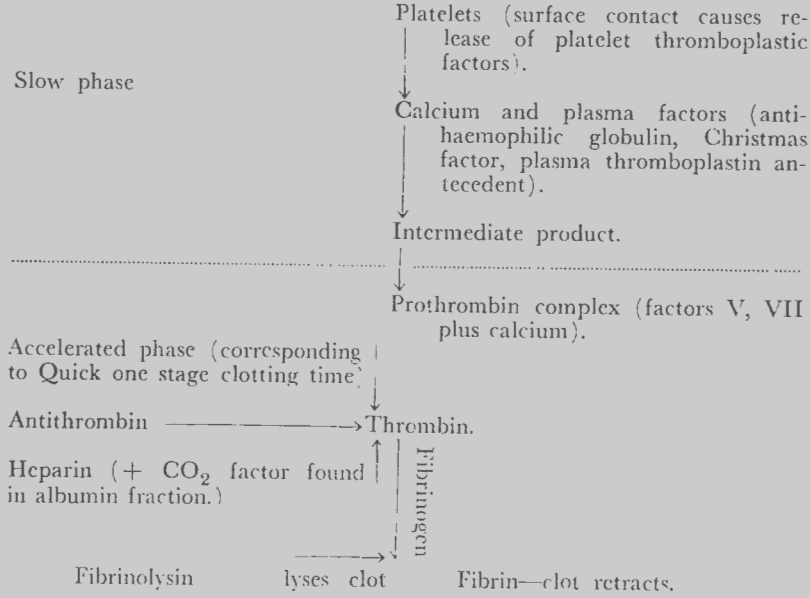
### *MODERN BLOOD COAGULATION THEORY*

Modern blood coagulation theory, which is in a great state of flux at the moment, could possibly be summed up, for the moment at least, in the following diagram.

### *SIMPLIFIED MODERN SCHEME OF BLOOD COAGULATION*




The coagulation of blood can be likened to a chain reaction with most of the substances taking part already present in the blood in a precursor or inactive form. The mechanism which triggers the whole reaction is the platelets coming into contact with a foreign surface. The platelets then clump and release certain factors which initiate the whole reaction.

The reactions can be divided into three steps.

1. Formation of active thromboplastin.
2. Formation of thrombin.
3. Conversion of fibrinogen to fibrin.

Substances required for thromboplastin formation are three plasma proteins:

A. Anti-haemophilic globulin.
B. Christmas factor.
C. Plasma thromboplastin antecedent.

Plus platelets and calcium ions.

These five substances combine to form an intermediate product which reacts with factors V, VII and prothrombin to form thrombin. Thrombin then reacts with fibrinogen to form fibrin.

It can be seen from this brief description of the blood coagulation mechanism that for a satisfactory diagnosis of a bleeding disorder a battery of tests is required which will tell the clinician first, if there is a bleeding disorder and secondly at what point in the coagulation process is there a deficient factor.

The following sets of tests are in routine use at the Auckland Hospital Laboratory and are thought to give an adequate coverage to all suspected haemorrhagic disorders.

1. Clotting time (Lee and White).
2. Bleeding time (Ivy).
3. Platelet count (Lempert's modification of Kristenson's method).
4. One stage clotting time (Quick).
5. Fibrinogen screen test.
6. Prothrombin consumption test (Biggs and Macfarlane).
7. Capillary fragility test (Hess).
8. Clot retraction estimation.
9. Examination of a stained film for platelet morphology.
10. Determination of fibrinolytic activity.
11. Thromboplastin generation test (Biggs and Douglas).

Some of these tests require no introduction and so will be mentioned only briefly.

The Lee and White clotting time will provide a lead in the more serious defects but in the milder forms of haemophilic and Christmas disease a normal clotting time is not uncommon.

The bleeding time, platelet count, capillary fragility test and clot retraction estimation are standard laboratory tests for the diagnosis of the thrombocytopenias.

The examination of a stained film for platelet morphology is often of use in a group of bleeding disorders known as the thrombocytopathies. In this group of disorders the common laboratory finding is an unusual platelet morphology. The platelets may be increased in number, large and bizarre in form and sometimes even smaller than usual.

The one stage clotting time of Quick is one of the most useful laboratory tests. A prolonged one stage clotting time is due either to deficiency of factors V, VII or prothrombin.

The reason for this is that the brain extract, used as a source of thromboplastin, has similar properties to the intermediate product in our blood clotting mechanism. When the brain extract is mixed with calcium chloride, in optimum quantities, and the test plasma, the only variable factors in the clotting of the plasma are factors V, VII and prothrombin.

It can clearly be seen then just how valuable this simple test is. Quantitative tests for these three factors are available if required. (Biggs and MacFarlane, 1953).

The remaining tests are of more recent innovation and will be described in detail.

It should be mentioned at the outset that all blood collected for coagulation work should be collected in siliconed equipment. The siliconing of apparatus provides a non-water wettable surface which prevents premature platelet breakdown. Wide bore needles should be used to prevent frothing of the blood during collection.

Both of these measures, the use of siliconed apparatus and wide bore needles are necessary to keep to a minimum release of tissue thromboplastin into the blood during collection. The routine anticoagulant for coagulation work is 3.8% disodium citrate.

## *FIBRINOGEN SCREEN TEST*

*Principle.*

This test was introduced at Auckland Hospital Laboratory for a rapid diagnosis of afibrinogenaemias due to obstetric accidents. A thrombin solution of known concentration is added to the test plasma and should cause clotting in less than 10 seconds. If the clotting time is longer than 10 seconds a quantitative estimation is performed.

*Reagents.*

Thrombin solution containing 25 units per millilitre. (Parke-Davis).

*Method.*

0.1 ml of thrombin is added to 0.1 ml of patient's plasma at 37°C and a stop watch started.

The clotting time should be less than 10 seconds and is usually around 5 or 6 seconds if the plasma contains at least 100 mgm. of fibrinogen.

*PROTHROMBIN CONSUMPTION TEST* (Biggs and MacFarlane 1953).

*Principle.*

Deficiences in the thromboplastin factors will result in the formation of a less potent thromboplastin than would normally be formed. This in turn results in poor consumption of prothrombin. Evidence of this can be obtained by converting the residual prothrombin in serum to thrombin and estimating its action on a standard fibrinogen solution.

*Reagents.*

Standard fibrinogen solution (Biggs and MacFarlane 1953).
Brain extract as a source of thromboplastin.
0.38% calcium chloride.

*Method.*

A two stage clotting time is performed on both the patient's plasma and serum. Serum is obtained from the tubes used for the whole blood clotting time. These tubes must be incubated for 1 hour at 37°C after they have clotted.

Two tubes are placed in a water bath at 37°C. To one tube is added 0.4 ml. of fibrinogen solution. To the other tube is added rapidly 0.2 ml. of serum or plasma, 0.2 ml. of 0.85% saline, 0.3 ml. brain extract, 0.28 ml. of 0.38% calcium chloride and a stop watch is started. After exactly 60 seconds incubation 0.2 ml. of the incubation mixture is added to the fibrinogen solution and the clotting time estimated. A technical difficulty arises in that the plasma will clot. This clot should be removed with a swab stick a few seconds prior to estimating the clotting time with fibrinogen.

An index is calculated from the plasma and serum clotting times by placing the plasma time over the serum time and expressing the result as a percentage.

A normal result should be less than 40%, i.e., at least 60% of the prothrombin should be consumed during coagulation.

The prothrombin consumption test is a crucial test in the diagnosis of blood coagulation disorders. Even in the milder haemorrhagic disorders where the whole blood coagulation is normal an upset prothrombin consumption will be found. The test, however, needs to be rigidly standardised to obtain reproducible results.

*TEST FOR FIBRINOLYTIC ACTIVITY*

*Principle.*

Patient's diluted plasma is clotted by thrombin and calcium chloride and incubated at 37°C for 24 hours. Dilutions of a

normal plasma are set up at the same time and lysis in the two sets of clots are compared.

This method sets a high standard for fibrinolytic activity but is a useful screen test.

Further quantitative tests for fibrinolytic activity are available (Biggs and MacFarlane 1953).

*Reagents.*

Buffered saline pH 7.35.
Calcium chloride 0.05 M.
Thrombin containing 20 units/ml.

*Method.*

0.4 ml. of citrated plasma is added to the buffered saline. Two sets of three tubes are set up.

(a) 1.6 ml. of diluted plasma.
(b) 0.8 ml. of diluted plasma plus 0.8 ml. of saline.
(c) 0.4 ml. of diluted plasma plus 1.2 ml. of saline.

To each tube of one set add 0.05 ml. of thrombin and to the other 0.1 ml. of 0.05 M calcium chloride. The tubes are mixed and incubated at 37°C with a control series for 24 hours.

The tubes are observed at intervals for lysis.

The thromboplastin generation test will be the subject of another paper.

*ACKNOWLEDGEMENTS*

I would like to thank Mr D. Whillans and Miss D. McKenzie for reading through this paper and making constructive criticism.

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# DETECTION AND DIFFERENTIATION OF OCCULT BLOOD

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The first contribution towards a chemical test for the detection of occult or altered blood in faeces was made by Boas in 1901. Leech, the first English worker in this field, published his findings in 1907. Since then much has been written advocating various chemical methods and discussion has centred mainly about the relative merits of these methods with some emphasis on sensitivity and reliability. These features appear to have been established by many workers (Gregersen, 1919; Abrahams, 1920; Daniel and Egan, 1939; Schiff et al, 1942; Kirshen et al, 1942; Andrews and Oliver-Gonzales, 1942; Hoerr et al, 1949; Mendeloff, 1953; Cook et al, 1956).

While a certain amount of confusion does exist concerning the use of these tests, literature does not reveal much disagreement. The variety of opinions offered, however, do not stress the intelligent use of a combination of tests chosen so as to reveal as much information as possible. Factors which contribute to this situation include:

(1) *PREPARATION OF PATIENT*

(a) *Diet*

It is generally agreed that a red meat diet will cause the more sensitive chemical tests to become positive (Johnson and Oliver, 1941). Vegetable enzymes are alleged to do likewise and chlorophyll may interfere with recognition of spectra of blood derivatives in faecal extracts (Harrison, 1949). The rate of passage of faecal material is sometimes determined by means of markers but enemas are sometimes recommended to prepare the patients in certain circumstances.

(b) *Contamination with Unaltered Blood*

Small amounts of blood lost into the digestive tract, e.g., from brushing of teeth, or perianal bleeding, e.g., haemorrhoids, or from other sources, e.g., menstruation, can cause a positive reaction to even the less sensitive tests.

(c) *Drugs*

Chief amongst these are iron compounds given to anaemia patients. A black stool is caused similar in colour to the "tarry" stool of genuine melaena. It is generally accepted that the iron so administered does not affect the less sensitive tests used. (Schwartz and Vil, 1947).

(2) *SENSITIVITY OF TESTS USED*

While there is agreement as to the sensitivity of the various tests known the majority of workers appear to be unaware of

the true significance and therefore do not appreciate the value of a combination of these tests.

With these points in mind several tests were combined and have been used in the Pathology Department, Christchurch, for several years to produce a routine procedure which would yield as much information as possible with minimum preparation of the patients. Emphasis was placed on a technique which would eliminate false positives as much as possible. For this reason the methods advocated are given in detail. An attempt is made to identify abnormal pigments by means of spectroscopy.

*PROCEDURE*

Initially no preparation of the patient is necessary. The specimen is tested by means of the benzidine test, as a screening procedure (this test detects blood in a dilution of approximately 1 part in 55,000). If this is negative, no further tests are applied. Because bleeding may be intermittent a series of daily specimens is a more reliable guide as to whether or not bleeding is present.

If the benzidine test is positive the less sensitive Gregersen's test is performed (detects blood in a dilution of approximately 1 part in 16,000). Should this be negative a microscopic examination for muscle fibres is carried out, because blood or meat in a diet may give a positive benzidine test. If the Gregersen's test is positive a spectroscopic examination of an extract of the faeces (detects oxyhaemoglobin in a dilution of approximately 1 part in 300 and acid haematin in a dilution of approximately 1 part in 500) and a microscopic examination for muscle fibres is done.

If the benzidine test only is positive it is advisable to repeat the tests after the patient has been on a meat and chlorophyll free diet for three days, care being taken to see that the bowels are opened daily.

*METHODS*

After examining the specimen of faeces for evidence of visible blood, transfer a portion of faeces to a test tube and emulsify in about four times its volume of distilled water. Place tube in a boiling water bath for five minutes (not longer) to inactivate vegetable enzymes.

*BENZIDINE TEST*

In a clean beaker add two ml. of glacial acetic acid to a knife point of benzidine. A small amount of benzidine should remain undissolved after thorough mixing. Add two ml. hydrogen peroxide. Mix. The addition of hydrogen peroxide is a check against false positives caused by contaminated glassware or reagents.

If the mixture remains colourless add a few ml. of the inactivated faecal suspension. Mix. If a dense dark blue colour

appears immediately it is reported as STRONG POSITIVE. If a blue or blue-green colour appears within thirty seconds it is reported as POSITIVE. Light green colours are ignored and regarded as negative. If a negative result is obtained add a drop of blood to check the activity of the reagents. Hydrogen peroxide is unstable and may give rise to false negatives.

*GREGERSEN'S TEST*

*Reagent*

8 grams benzidine.
1 gram barium peroxide.
Mixed thoroughly and stored in a dark bottle.

*Technique*

A knife point of reagent and 2 ml. 50% glacial acetic acid are mixed thoroughly. Some of the reagent should remain undissolved after mixing. If a green or blue colour develops at this point it indicates that the glassware or the reagent may be contaminated. If this is so discard and start again. If no colour develops add a few ml. of inactivated faecal suspension and mix.

A deep blue colour developing within 3 seconds is reported as a STRONG POSITIVE.

A blue or blue-green colour developing within 15 seconds is reported as POSITIVE.

Light green colours are not reported. If a negative result is obtained add a drop of blood to check the activity of the reagents.

*SPECTROSCOPIC EXAMINATION*

With a glass rod transfer a piece of faeces about the size of a large bean into approximately 10 ml. of water. Mix well. Add rather more than an equal volume of glacial acetic acid and mix. Add a volume of ether equal to the volume of the mixture. Mix well. If the ether layer does not separate out add water drop by drop and mix again. This sometimes serves to break up the emulsion. If this procedure is not successful centrifuge the emulsion and pipette off ether layer and examine spectroscopically for absorption bands of acid haematin and porphyrins. Mix ether extracts with an equal quantity of 25% V/V hydrochloric acid, shaking well. When hydrochloric acid layer has settled out examine for porphyrins. The ether layer should be examined again for acid haematin.

| | Ether-Acetic Acid Extract Alpha Band | Hydrochloric Acid Extract |
|---|---|---|
| Acid haematin | 6380 | 6620 (ether) |
| Deuteroporphyrin | 6215 | 5910 |
| Protoporphyrin | 6325 | 6025 |
| Coproporphyrin | 6235 | 5910-5935 |

It has been reported that the wave length of acid haematin in the ether extract after treatment with hydrochloric acid will be shifted to 6620. We have found, however, that it is sometimes shifted to this figure after treatment with the weaker acid, glacial acetic acid.

*OXYHAEMOGLOBIN*

Emulsify a portion of faeces about the size of a pea in approximately 10 ml. of water and centrifuge. Examine spectroscopically for absorption bands of oxyhaemoglobin. Alpha band—5778, beta band—5400.

*DISCUSSION*

Chemical tests for blood rely on the fact that the active group involving iron in haemoglobin transfers oxygen from hydrogen peroxide to certain oxidisable substances such as benzidine, orthotolidine, gum guaiacum and pyramidone to give coloured oxidation products. These tests are of varying degrees of sensitivity and application of these degrees of sensitivity is suggested to give greater information which may be more specific. Care is used in applying these tests so as to eliminate false positives which may be caused by inadequate observation or interfering substances such as vegetable enzymes. From our experience we have found that glassware is particularly hard to clean for these tests and for this reason we emphasize the necessity to add the hydrogen peroxide before the test suspension to check for cleanliness.

Haphazard techniques have no place in an established laboratory and should be reserved for places where they are at least of some help, such a place being a physician's consulting room where full laboratory facilities are lacking. (Hoerr et al, 1949.)

The value of the spectroscopic examination is apparent when the implications of the detection of the various substances is made clear. However, at times identification may be difficult and failure to detect by no means rules out the possibility of the substances looked for being present. The presence of oxyhaemoglobin indicates a bleeding site low in the intestine such as may be caused by ulcerative colitis, chronic amoebic infection, or haemorrhoids.

The presence of acid haematin indicates a fairly large amount of bleeding (approximately equal to the ingestion of 80 ml. of blood) which has been acted on by digestive acids. Such bleeding may be caused by gastric ulceration. It should be noted, however, that it has been established that the more sensitive tests for occult blood will detect amounts of ingested blood of approximately 10 ml.

The presence of porphyrin detected by spectroscopy indicates an increase due to pathological causes. Normal sources are through absorption of preformed porphyrins in food, or through

the formation of porphyrin from haem pigments (haemoglobin, chlorophyll) under the influence of intestinal flora or again through synthesis of porphyrins by micro-organisms. Here the interpretation is not obvious for porphyrin production due to gastro-duodenal ulceration seems to be variable and there may be little or no increase of porphyrins or considerable increase according to the intensity and duration of haemorrhage, to the character of the intestinal flora and especially to the speed with which the intestinal contents pass along the digestive tract. On the other hand porphyrin production may be particularly high in cases of gastric achlorhydria and this is so in cases of gastric carcinoma, a condition which is often accompanied by achlorhydria.

From these facts it can be seen that much information can be gained from a systematic identification of blood and blood derivatives in faeces.

*SUMMARY*

Occult blood has been discussed with reference to the various tests used in its detection.

A method incorporating a battery of tests with various degrees of sensitivity is advocated together with a procedure which helps eliminate either false positives or negatives. The tests, chosen to reveal a maximum of information, are the benzidine test for use as a screen, Gregersen's test as an indication of larger and more significant quantities of blood, and a spectroscopic examination for the presence of increased amounts of recognisable pigments.

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the antibiotic sensitive "plants" have succumbed (3). It seems improbable that strains have reverted from insensitive to sensitive strains, as this is a rare occurrence in the laboratory as shown by R. W. Fairbrother (4).

*SUMMARY*

A further series of antibiotic sensitivity tests with S. aureus is recorded. There is shown to be a lower percentage of increasingly insensitive strains than was reported in the previous article (1).

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## BOOK REVIEWS

### *REVIEW OF PHYSIOLOGICAL CHEMISTRY*

Harold A. Harper, Ph.D.
6th Edition — 375 pages — 1957. Price 36/-
Lange Medical Publications, Los Altos, California.

This book is a concise and readable review of the essential parts of a rapidly expanding section of chemical behaviour—physiological chemistry. While it does not qualify as a text book it serves as a valuable adjunct to more detailed technical works. It includes chapters on carbohydrates, lipids, proteins, nucleoproteins, vitamins, enzymes, biological oxidation, blood, lymph and cerebospinal fluid, chemistry of respiration, digestion and absorption from the gastrointestinal tract, detoxication, metabolism of carbohydrates, metabolism, metabolism of nucleic acids and their derivations, functions and tests of the liver, the kidney and the urine, water and mineral metabolism, chemistry and functions of the hormones, calorimetry, chemistry of the tissues.—J.C.

### *REVIEW OF MEDICAL MICROBIOLOGY*

E. Jawetz, PhD., M.D., J. L. Melnick, Ph.D., E. A. Adelberg, Ph.D.
2nd Edition — 361 pages — 1956. Price 36/-
Lange Medical Publications, Los Altos, California

It is the author's stated intention to make available a brief up-to-date presentation of these aspects of medical microbiology which are of particular significance in the fields of clinical infections and chemotherapy. There is a bias towards the discussion of basic science to the exclusion of details of technique and procedure but this by no means detracts from the value of this work as a laboratory aid. It includes chapters on bacterial cytology, metabolism, variation, cultivation and classification. Other topics discussed are antibacterial agents, chemotherapy, host-parasite relationship, antigens and antibodies, medical mycology, normal microbial flora of the human body, principles of diagnostic medical microbiology, general properties and isolation of viruses, and bacteriophage. In addition there are several chapters devoted to properties of specific bacteria and to methods of isolation and identification. This book is well set out and this makes for easy reading. It has recently been selected as an approved text book by the University of Otago for their medical curriculum.—J.C.

### *TECHNIQUES IN BLOOD GROUPING*

Ivor Dunsford and C. Christopher Bowley
1st Edition — 250 pages — 1955. Price 26/3.
London, Oliver & Boyd

This is a practical manual which describes systematically the detailed laboratory techniques employed in blood grouping. It is well laid out, concise, and the techniques are simply described in tabulated form. It is divided into three sections:—

(1) Description of basic principles of red cell antigen and antibody behaviour on which the techniques are based, and suggestions on organisation and method in a Blood Bank laboratory.
(2) Step by step details of systematic techniques.
(3) Glossary of terms and symbols used in blood group serology.

The authors are from the Sheffield Blood Transfusion Centre where efficient and large-scale work is carried out, and although most laboratories have their own versions of these tests, this manual cannot fail to be of interest and can be recommended to all medical laboratory workers who are connected with such work. L.E.

## MINUTES OF A COUNCIL MEETING OF N.Z.A.B.
### Held at Wellington Hospital on Saturday, 8th June, 1957

1. *Present*: Messrs McKinley, Olive, Reynolds, Donnell, Walsh, Murphy, Corey, Cannon, Bloore.

2. *Minutes of Previous Meetings:*

Moved: That the Minutes of previous Council Meetings be amended to authorise the Hon. Treasurer to establish an account on the Association's behalf with the Auckland Savings Bank. The same signatories as for the trading account being authorised to operate on this account.

Olive-Corey.

Moved: That minutes be taken as read and adopted.

Murphy-Walsh.

3. *Applications and Resignations:*

The following new members were elected:

Junior Members:

Misses M. Buchanan, A. Henderson, F. Malaska, K. Schollum, G. Walton, Messrs B. Dawkins, D. Martin, C. Small (Auckland); Misses A. K. Barraclough, S. M. Batcheldor, N. E. Campbell, E. Titterington, S. Harding, M. Burnett, A. Wesney, S. G. Whyte (Wellington); Miss H. M. Ranford (Waipukurau); Miss L. Scarth (Ashburton); Miss H. Dacre (Wairoa); Mr M. L. Harris (Oamaru); Mr T. J. Naughton, Miss A. Currie (Hastings); Miss P. Thawley, Mr A. K. Luttrell (Napier); Miss B. M. Slater (Dannevirke); Miss D. M. Kenworthy (Dunedin); Misses A. Hopcroft, R. Samuels, M. Inch, B. Furness (Nelson); Misses J. Stewart, J. Witten (Rotorua); Miss P. J. Quilter (Blenheim); Miss M. Campbell (Hawera).

Senior Members:

Mr W. Crawley (Ruakura); Mr H. C. W. Shott (Dunedin).

Bloore-Cannon.

The advancing of subscriptions of those who had applied early in the year and paid subscriptions for 1956-7 to 1957-8 was approved.

The following resignations were accepted with regret: Mr S. W. Entwhistle (Oamaru); Mr O. Bennett (Napier); Miss P. B. Scott (Auckland); Misses Curtain, McLachlan, Jagger (Nelson); Mrs D. J. E. Stanton (nee Segar), Mrs J. A. Neads (nee Skerrett) (Auckland).

Bloore-Murphy.

The Council's appreciation of Miss Scott's services was placed on record and the Council wished her well for the future.

4. *Treasurer's Report:*

The Hon. Treasurer reported on the satisfactory state of the Association finances.

5. *Editor's Report:*

The Editor reported on great difficulty in obtaining sufficient material for the Journal. He outlined the efforts he and his committee had made to stabilise Journal affairs.

The President said it was essential to continue with the Journal. The Council agreed.

Discussion then took place of ways and means of obtaining more material.

Mr Murphy thought the name of the Journal ought to be changed as it was misleading at present. Mr Cannon agreed.

After discussion the President expressed the view that the name of the Journal could not be changed without changing the name of the Association.

Council agreed.

Mr Cannon then said that he wished to resign as Editor for personal reasons and not because of the difficulties of the job.

The President thought the venue of the Journal should not be changed.

Moved: A vote of thanks to the Editor and Committee on the fine job they have done and expressed the hope that they would continue with the work.

Olive-Murphy.

It was proposed that Mr Cannon reconsider the matter of the Journal Editorship and report to next Council meeting.

6. *Correspondence:*

1. (a) Correspondence with D.G.H. re examination notification accepted.

(b) Correspondence with Dept. re examination marks.
Mr Olive pointed out that the marks from one examination to another bore no relationship to each other and thought they could thus be misleading. He said the marks were sent to heads of individual laboratories. It was agreed that no further action be taken.

(c) Syllabus Correspondence.
It was noted that a previously expressed view favoured the syllabus being properly printed. The President thought that it would be better not to press for this at present.

(d) Correspondence re back dating of salaries.
It was felt that this should be included in submissions to S.A.C. although probably little could be done about it.
The Secretary was instructed to write to S.A.C. protesting at the delay in implementing salaries submissions. This was also to be conveyed to the Committee by the Association's representatives.

(e) Correspondence with Hospital Board Association re Insurance and Brochure.
The Secretary was instructed to write to the Association again, requesting comment on the brochure proposed.

2. Letter from Mr B. Main regarding Marital Status.
The Council felt that as the Grading Committee is a Statutory Committee it was entitled to ask for any information it wished. There was no indication whether the matter was taken into consideration by the Committee.

3. Remit and Report from Auckland re sick leave.
Mr Olive said that the matter had been thoroughly discussed at a previous Conference and that it was unlikely that anything would be gained.

4. An enquiry about the Syllabus.
This matter was covered under the correspondence dealing with the Syllabus.

5. Remit re payment of fares to examinations.
After discussion the view was expressed that as no fees were paid for the examination it was reasonable enough for candidates to pay expenses to the examination.

6. Remits from Mr B. Main.

(1) Overtime for Grade Officers.
The President said that the Department had in the past been opposed.
Mr Reynolds said that in the Public Service 10% of the salary up to a certain figure was allowed for overtime. He cited

the case of a sole charge Bacteriologist who was Grade D and who worked much overtime but could claim no money. If he were graded as a Staff Hospital Bateriologist he could earn more money with overtime than as a Grade Officer.

The President said that a similar position applied in large Hospitals where a Staff Hospital Bacteriologist could earn more than a Grade Officer. He also pointed out that generally there was no prospect of taking time off.

The Secretary said that the reason for the overtime being done obviated a Grade Officer taking time off.

It was agreed to submit the proposal to S.A.C.

(2) Payment of "On Call" allowance: After discussion it was felt that the overtime proposal covered this and that no action should be taken.

(3) Publishing of Grading Lists.

Mr Olive said that this matter was raised at a previous Conference. The Grading Committee considered the information personal and would not supply information although they did not object to an individual disclosing his own grading.

The President said that the Grading Committee considered each grading in relation to others in the country and that the gradings were reconsidered regularly. In fact, the Committee had power to raise an individual's grading without application having been made. After further discussion it was decided to take no action in the matter.

7. Complaint re delay in election of new members.

The Secretary explained the reason for the delay.

The President said that the Postal Election system must be used to avoid delays.

8. Report from the Editor (see under Editor's Report above).

9. Nominations for S.A.C.

The President said that he would be willing to stand but definitely would retire after a short period. He felt that the nominees should be two from Council plus one of the previous nominees.

Mr Olive recommended always including a Graduate as a nominee.

The Secretary suggested that a younger member should be appointed to gain experience.

The President pointed out that representatives were appointed on the Association's behalf and not to represent individual points of view.

The following were appointed:

Representatives: McKinley, Reynolds, Olive.

Deputies: Bloore, Whillans.

10. Correspondence regarding Shift Work.

Mr Olive said that the new Regulations bore little resemblance to our submissions to S.A.C.

The Secretary said that the assertion in the letter from the Secretary, S.A.C. that we had made submissions about shift work was not correct.

The Council agreed.

The President said that the Regulations had been gazetted and could not be changed. He asked what the staffs felt at the places concerned with shift work.

The Secretary gave the background to the letter from the Auckland group.

The President said that as Association members would work any shifts the Association should take part in any discussions. He was perturbed that discussions took place without the Association being represented.

The members of Council agreed.

The Secretary expressed his concern at the implications of shift work under present conditions.

After much further discussion along similar lines the following motions were passed:

(1) MOVED: The N.Z. Association of Bacteriologists notes that provision has been made in the Hospital Employment (Laboratory Workers) Regulations 1957 for shift work. The Association is concerned that it was not consulted in the matter as this shift work provision primarily concerns its members. The Association deplores the manner in which the provision was introduced and requests that in any future deliberations affecting the members of the Association representatives of the Association should be present. Bloore-Olive.

(2) MOVED: The Council of the N.Z. Association of Bacteriologists expresses concern at the introduction of shift work for routine purposes unless adequate staff is available to ensure supervision and the maintaining of standards. Reynolds-Olive.

11. Back dating of increases to April 1955.

Mr Olive proposed (a) that we again request the full Public Service scales including specifically overtime for Grade Officers. (b) Meal Money: This submission from A.G.M. 1956 to go to S.A.C.

*GENERAL BUSINESS:*

1. New Regulations.

Mr Reynolds pointed out that there was no provision apart from Reg. 14 for payment for Statutory Holidays.

He MOVED: That the previous submissions re overtime and penal rates be resubmitted with the addition of double time for Statutory Holidays. Reynolds-Olive.

2. Essay Judge.

MOVED: That the Editor act as Judge in the Essay Competition. Olive-McKinley.

3. Amendment to Rule 11a.

Mr Murphy pointed out that this was not necessary so long as notice to change rules was given sixty days ahead of the Annual Meeting.

4. Remit to allow formation of branches.

Referred to Conference.

5. Conference organisation report from Mr J. D. R. Morgan.

Mr Cannon suggested that a standard report should be prepared and added his observation that the tearoom should be adjacent to the Trades Display.

Mr Walsh said that it was really necessary for the Conference Balance Sheet to be properly prepared.

6. Letter from Mr Cannon.

(a) Remits passed at the Hospital Boards' Conference.

Mr Cannon commented on several of these.

(b) Reciprocity with overseas bodies.

Mr Olive was requested to ask that the syllabus be properly printed as it was not very satisfactory to negotiate with overseas bodies using a cyclostyled syllabus.

The Secretary was instructed to write to the Dietitian and the Senior Tutor Sister at Wellington Hospital expressing the Council's appreciation for the use of facilities.

The meeting closed at 4.30 p.m.

## MINUTES OF COUNCIL MEETING, 3rd JULY, 1957, AT PALMERSTON NORTH HOSPITAL

1. Present:

The whole Council. Mr H. Hutchings, Conference Secretary, attended by invitation.

2. Minutes of Council Meeting on 8.6.57.

Taken as read. Olive-Cannon.

3. Business from Minutes.

The Secretary indicated that the minutes should be amended to show that the matters of back dating of salaries and protest over shift work provision should be referred to the Director-General of Health and not sent to Salaries Advisory Committee as a formal submission.

Moved: Minutes as amended be adopted. Olive-Corey.

4. Applications and Resignations.

The following new member was elected. Miss S. McMullien (Dargaville). Bloore-Cannon.

Resignations: Miss J. Wilkinson (Wanganui), Mrs B. Bush (nee McKay (Auckland), J. Ives (Timaru). Bloore-Cannon.

5. Balance Sheet.

The Treasurer presented the Balance Sheet.

Moved: That Treasurer be authorised to pay expenses of Council meeting, Secretarial and other expenses for this Council meeting.

McKinley-Walsh.

6. Journal.

Mr Cannon proposed that Miss L. Evans and Mr G. Rose (Christchurch) be the Joint Editors of the Journal.

Moved: That these nominations be accepted. McKinley-Donnell.

Mr Cannon then raised the question of handling exchange Journals received by the Association. He said that he had discussed the matter with the librarian at Christchurch who suggested that they be either loaned or given. The gift would be preferable.

Members of Council agreed with this.

Moved: That the exchange Journals received by the Association be given to the Canterbury Medical Library and future copies on receipt be given to the library. Corey-Olive.

*Essay Competition.*

Mr Cannon reported on this. There were three entries. The winners of each section were:—

Essay—Miss M. Buchanan (Auckland).

Technical—Miss J. A. Maitland (Christchurch).

Moved: A vote of thanks to Mr Cannon for his efforts with the Journal and for arranging the question of the Editorship.

McKinley-Olive.

7. Correspondence.

List of Examiners: The President suggested that the present list be increased by three or four members to a total of ten. After discussion it was moved that the following names be submitted to the Department of Health as examiners.

Ellison, Whillans, Reynolds, Jarratt, McKinley, Adamson, Bloore, Ekdahl, George, Hutchings, Rush-Munro. McKinley-Cannon.

Inward Correspondence accepted. Olive-Bloore.
Outward Correspondence approved. Corey-Murphy.

8. General Business.

Mr Hutchings reported on Conference matters. He suggested that the dates for mailing literature associated with Conference as notified to him be advanced.

The President thanked him for his and his Committee's work.

Election of Officers.

The Hon. Secretary reported on difficulties with the list of names provided for the scrutineers. This affected only one office but he asked for a ruling on the validity of some papers which had been excluded because of inaccurate information in the list.

After full discussion it was moved: That in respect of the election of officers for 1957-8 the voting papers enclosed in envelopes endorsed with the signature of members indicating their belief that they are financial members be accepted as valid voting papers. McKinley-Cannon.

Mr Olive expressed deep regret at Mr McKinley's passing from office and asked that the Association's sincere thanks be placed on record for all he had done for the Association in the past. Olive-Donnell.

The meeting closed at 5.45 p.m.

## MINUTES OF THE ANNUAL GENERAL MEETING OF THE N.Z. ASSOCIATION OF BACTERIOLOGISTS HELD AT PALMERSTON NORTH ON JULY 4, 1957

Mr A. M. Colquhoun, Chairman of the Palmerston North Hospital Board, extended a warm welcome to delegates and wished the Conference well. He said that he thought more benefit came from such conferences than was often realised.

The President thanked Mr Colquhoun for his welcome.

Dr. T. H. Pullar, Pathologist, Palmerston North Hospital, then addressed conference on the subject of "Hospital Laboratories and Research". He said that although he was not recommending hospital laboratories breaking into research, he sometimes envied research workers especially those employed in outdoor work, their lack of the harrassment of routine work. One of the pre-requisites of research is time. He said that there are two forms of research, pure and applied, which are not always clearly separated. Most work in this country is applied research. Applied research is both exploratory and developmental, the latter often being less exciting. He thought some modest attempt at developmental research might be undertaken by the routine worker. Some of this work should be undertaken in collaboration with medically qualified staff and he was pleased to see some sharing of authorship with technicians in some published work. He suggested that junior members should contribute more to the Journal of the Association and that senior members of staff should try to discuss research problems with juniors. He felt that work should be done for itself and not with the main idea of publication as is often obviously the case.

Dr. Pullar said that many results of medical and biological research were found by chance. The intuitive ability to distinguish promising clues is the essence of research. He then cited several examples of this and closed by suggesting that the Association establish a central library of non-technical books of general scientific interest and biographies.

The President thanked him and agreed that the library suggestion was a good one.

*Apologies* were received from the following: Messrs P. H. Curtis, F. M. Rush-Munro, R. Stockwell, C. Masters, J. Thomas, Misses B. Pierce, P. Robinson, M. Lindsay (Auckland).

*Roll Call.* The following delegates attended Conference: K. Bilkey, W. J. Sloan, J. G. Meredith, M. D. McCarthy, G. J. Hill, A. M. Murphy, D. J. Philip, M. McL. Donnell, R. T. Kennedy, L. M. Kirkup, Miss S. A. Furket, Miss Y. A. Clarke, G. J. Cameron, Miss H. Chesterman (Auckland); Miss J. Sorensen, Miss J. Mattingley, L. Reynolds, N. Ellison, I. Lyon, M. J. Lynch, H. Olive, Mrs R. C. Parker, M. L. Bell, A. Schwass, W. Aldridge, Miss N. B. Ellerm (Wellington); Miss H. MacDiarmid (Ruakura); K. G. Reeve (Dannevirke); A. F. Harper (Wanganui); G. W. McKinley (Waipukurau); H. Hutchings, Miss J. C. Manns and other members of the staff as duties permitted (Palmerston North); Miss L. J. Gray (Invercargill); I. D. Scott (Thames); Miss W. Corsbie (Tauranga); F. Corey, Mrs M. B. Corey, F. C. Dixon (Nelson); S. Shepherd, Miss J. Hellyer (Waikato); D. W. Fitzgerald (Timaru); H. G. Bloore (Blenheim); K. Clarkson (Lower Hutt); D. C. Smith (Balclutha); R. MacKenzie (Kaitaia); I. R. Buxton (Oamaru); D. B. Jones, S. C. Marshall, G. Tait (Wallaceville); J. Morgan (Dunedin); Miss P. J. Prentice, Miss J. Grey (New Plymouth), Miss J. Styles, J. B. Rankin (Napier); R. W. Barrington (Wairoa, H.B.); J. J. G. Peddie (Upper Hutt); Miss A. Turner, G. George (Rotorua); R. Wales (Dargaville); T. Tanner, J. J. Cannon, G. R. Rose, Miss L. Evans (Christchurch); B. W. Main (Ashburton); J. A. Carroll (Hastings); D. H. Diggle (Westport).

*President's Address:* The President spoke of the vast changes in the Association since the second Conference of the Association was held in Palmerston North, eleven years ago. The attendance was a record one this year. He spoke of the great amount done by the Association for everyone, notably in salaries, examinations and financially, but also in raising of morale. He appealed to members to support the Association as it is their Association and without support would cease to exist. He also urged on members the need for increased support for the Journal which is one of the Association's most important activities.

## REMITS

1. Sick Leave.

Mr Murphy outlined the background to the remit and said that since the first proposal he had spoken to Public Service Association representatives who said they were satisfied with the present arrangement. Mr Olive thought the leave was adequate and had worked satisfactorily for a long time. Mr Diggle asked if there was a more generous arrangement.

Mr Murphy cited the Pharmacists and Clerical leave. The President thought that it was not possible for the sick leave to be improved. Delegates agreed.

Mr Rankin moved that the remit be abandoned.

Carried. Rankin-Diggle.

2. Payment of Fares to Examinations.

Mr Kennedy said he thought it was to a Board's advantage to have qualified staff but this matter was really part of a larger dissatisfaction with the exams.

Miss Mattingley asked if the payment of fares had affected any candidates sitting an examination.

Mr Kennedy thought not but said that it was quite a financial burden.

Mr Diggle quoted the case of Auckland Hospital Board clerical workers having examination expenses paid.

Mr Dixon thought that it was perhaps more advantageous for examination expenses to be paid rather than Conference expenses.

Mr Olive disagreed.

Mr Reynolds said that it was usual to have service guarantees where expenses were paid.

The proposal was rejected when a vote was taken.

3. Overtime Payment to Grade Officers.

The Secretary reported the action taken by Council in submitting the proposal to Salaries Advisory Committee.

Moved: That the Council's action be endorsed.

Carried. Main-Barrington.

4. Payment of "On Call" Allowances.

Mr Main in introducing the remit referred to the Pharmacists and Radiographers' payments.

The President ruled that only the Radiographers could be considered.

Mr Bloore thought that Grading Committee took the number of calls in any position into account.

Mr Reeve referred to the higher training level of Laboratory workers.

Mr Cannon remarked that often Grade Officers earned less than a Staff Hospital Bacteriologist.

The poposal was put to the meeting and carried unanimously.

5. Grading Lists.

The Secretary explained that nothing official could be done.

After discussion it was proposed and adopted that those who wished could send their grading to the Hon. Secretary from whom they would be available.

6. Change of Rules to allow formation of Branches.

Mr Kennedy described the formation of the group in Auckland and the subsequent proposal of this remit.

Mr Murphy spoke in support of the formation of local branches. He said that branches should be properly affiliated and controlled by the Association.

Mr Meredith described how the Auckland group had encouraged the interest of Juniors in Association affairs.

Mr Cannon said that the scattering of staff in Auckland made a group meeting necessary, and although he thought the time was not ripe for other centres he supported the idea.

Mr Bloore saw no advantage in branch formation.

The President pointed out that Mr Murphy had indicated the necessity for control of branches by the Association.

Mr Buxton asked if the formation of branches would affect annual subscriptions.

The President: No.

Mr Kennedy replied to points raised and said that the group only wanted official recognition.

It was then proposed that the Council of the Association prepare for the next Annual General Meeting an amendment to the Rules to allow the formation of branches.

Carried by majority vote.

Minutes of Annual General Meeting, 1956.

As read. Olive-Hutchings.

Business from Minutes:

The Secretary described action that had been taken in several matters from last Conference.

Moved: That Minutes be adopted.

## NEW ZEALAND ASSOCIATION OF BACTERIOLOGISTS
## TWELFTH ANNUAL REPORT, JULY, 1957

Ladies and Gentlemen,

I have the honour to present the twelfth Annual Report of the New Zealand Association of Bacteriologists.

*Membership:* This now stands at 150 Senior members, 183 Junior members, 16 Honorary members, and 3 Life members. There have been 16 resignations and 36 new members elected.

These figures are more accurate than those of the past few years, thanks to the work of the Hon. Treasurer. They are the numbers of financial members for this year. It is rather difficult to keep accurate figures of membership as so many who leave laboratory work fail to formally resign thus tending to keep the figures too high.

*Finance:* The Hon. Treasurer will present the Balance Sheet.

*Annual Conference, 1956:* Our Dunedin members once again acted as hosts for Conference last year with commendable results. The Conference Committee conducted their work most competently and the Association very much appreciates their effort.

*Proceedings of Council:* Council met at the beginning of June to prepare submissions for Salaries Advisory Committee. A fuller report of these matters will be given to the meeting later.

After years of negotiation and hard work the Syllabus for the Final Examination has now been approved and published. This will make the task of the training staff much easier and be of great assistance to all trainees. It also brings the question of reciprocity with overseas organisations a step nearer as we now have a firm basis from which to negotiate.

Following the unfortunate incidents of last year with regard to the organisation of examinations I am pleased to report that the Association's protest to the Department of Health has resulted in the formation of a committee to supervise the organisation of the examinations. Mr Hugh Olive is the Association's representative on this committee.

The Council was very concerned to find when the Hospital Employment (Laboratory Workers) Regulations, 1957, were finally gazetted that provision had been made in them for shift work. The most disturbing feature being that this had been done without the Association having been consulted at all. A strong protest has been made to the Department about this.

*The Journal:* The Editor and his Committee have put much work into Journal business affairs this year. The cover design has been changed and advertising rates have been adjusted. Unfortunately their enthusiasm has not been echoed by the members of the Association. I would stress that if the Journal is to continue its important place in Association affairs members must contribute regularly and often.

*Essay Competition:* Interest has not been great in the competition this year again. It has been suggested that the advertising of the competition has been rather inadequate. The Council suggests that senior members of laboratories encourage juniors with their entries and make sure that the notice published in the Journal be prominently displayed in their laboratories.

Once again we are met together for a period of sharing of ideas and experiences and the Council trusts that all will not only accept the benefits of the Conference but will contribute something to its success.

For and on behalf of the Council,
M. McL. DONNELL,
Hon. Secretary.

Donnell-Sloan.

Moved: That Report be adopted.

Balance Sheet.

That Balance Sheet be adopted. Walsh-Olive.

10. Election of Officers.

The voting resulted in a tie for the Presidency. The Secretary was subsequently instructed to prepare a re-ballot for the Presidency.

Other Officers were elected as follows:—

Vice-President: Mr A. Murphy (Auckland).

The unsuccessful Presidential candidate.

Hon. Secretary: Donnell (Auckland).

Hon. Treasurer: Walsh (Auckland).

Council: Bloore (Blenheim), Corey (Nelson), Evans (Christchurch).

Junior: Tanner (Christchurch).

11. General Business.

1. Mr Reynolds proposed Wellington as the venue of Conference 1958.

2. The Journal. Mr Cannon, retiring Editor, said that more interest was shown in the Journal by overseas people than by local people. He appealed for more support from members and asked Seniors to encourage Junior members to contribute.

3. Essay Competition. The winners were:—Essay, Miss M. Buchanan (Auckland); Technical, Miss J. A. Maitland (Christchurch).

The President congratulated the winners.

He then asked the meeting to record their approval of Mr Cannon's effort as Editor and added his appeal for material for the Journal. He thanked Miss Evans and Mr Rose for taking up the joint editorship of the Journal.

4. Honoraria. Moved: That these remain the same as last year. Olive-Morgan.

5. Library Proposal. Mr Reynolds suggested that the Council be authorised to establish such a scheme and to purchase books, the Association to pay transport costs one way.

The meeting approved the proposal.

The President said that Mrs Corey had offered to act as Librarian.

Mr Cannon suggested that the Journals received in exchange by the Association be kept by the Librarian.

6. New Regulations. Mr Hutchings pointed out that the Regulations did not indicate how much call work qualified for extra leave. He asked if the Regulations could be more specifically worded.

The Secretary was instructed to write to the Secretary, S.A.C. for interpretation.

7. Shift Work. The Secretary described the way in which this had been introduced to the new Regulations and the action taken by the Council to record the Association's protest.

8. Superannuation. Miss Mattingley asked if the superannuation scheme of the Public Service could be applied to the Hospital scheme.

Mr Bloore was asked to make local enquiries and reported later to the meeting that the Hospital scheme was more advantageous.

Mr Smith asked a question about the biographical sketches for the election of officers.

The Secretary explained his lapse in the matter.

Mrs Parker suggested a questionnaire for some degree of standardisation.

The Secretary noted this suggestion.

Mr Shepherd asked for clarification regarding payment of double time

on Sundays. The Secretary gave a brief explanation and suggested he see Mr Shepherd later.

Mr Reynolds moved that the meeting place on record its appreciation of Mr McKinley's work for the Association over the past twelve years.

Seconded: Olive.

This was carried by acclamation.

Mr Olive later proposed a vote of thanks to the Chair.

Mr Ellison in seconding this motion spoke of Mr McKinley's hard work, especially for Juniors over the years.

The motion was carried by acclamation.

Mr McKinley thanked members.

The meeting closed at 4.30 p.m.

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# RESULTS OF ELECTION

## For

## PRESIDENT AND VICE-PRESIDENT

## FOR 1957-58

* * *

### President:

### Mr L. REYNOLDS (WELLINGTON)

### Vice-President:

### Mr H. OLIVE (WELLINGTON)

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## MARLBOROUGH HOSPITAL BOARD

### Staff Bacteriologist

Applications are invited from qualified persons, either male or female, for a position as Staff Bacteriologist in the Laboratory at Wairau Hospital, Blenheim.

Salary and allowances will be maximum allowable under the Hospital Employment Regulations.

Applications stating age, qualifications and experience to be addressed to the Medical Superintendent.

GEO. MITCHELL
Secretary.

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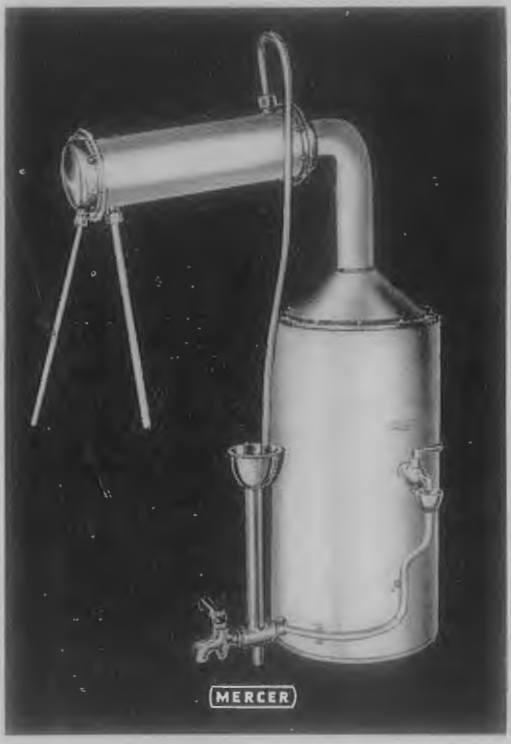


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