Vol. 15, No. 1 APRIL, 1960

JOURNAL

OF THE NEW ZEALAND ASSOCIATION OF BACTERIOLOGISTS

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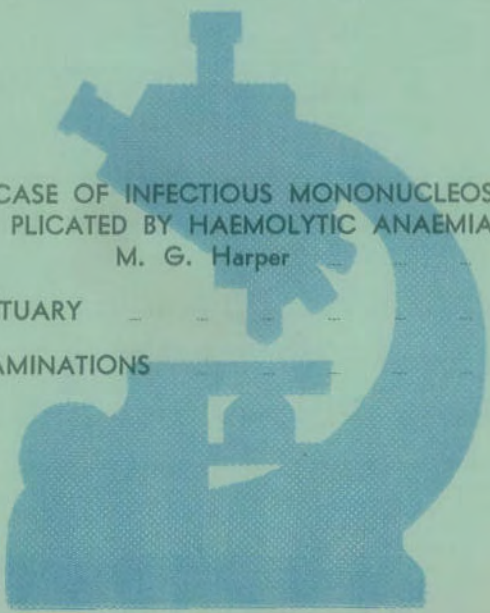

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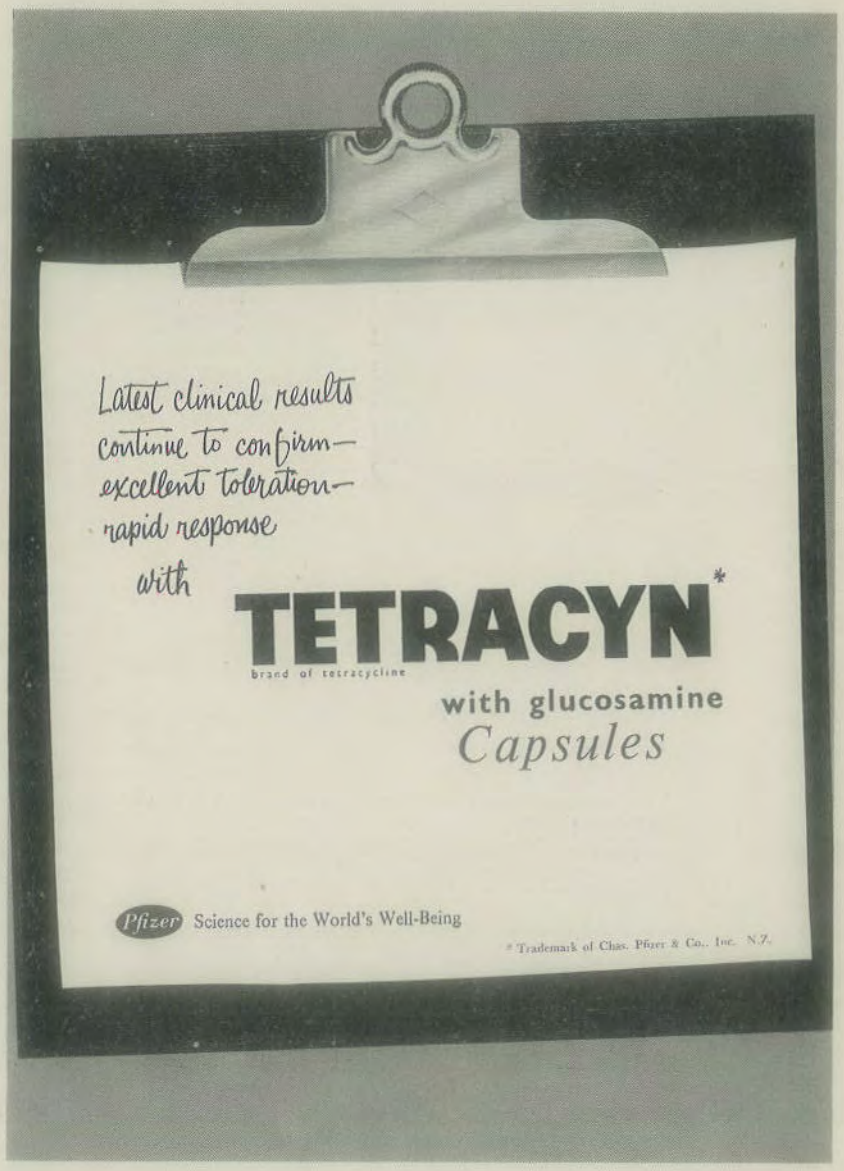
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JOURNAL OF THE NEW ZEALAND ASSOCIATION OF BACTERIOLOGISTS

Vol. 15, No. 1 APRIL, 1960

Communications regarding this JOURNAL should be sent to the Editor, Department of Pathology, Christchurch Public Hospital, Christchurch.

Communications primarily affecting the Association should be addressed to the Secretary, Mr H. E. Hutchings, Pathology Department, Palmerston North Hospital.

All moneys should be paid to the Treasurer of the New Zealand Association of Bacteriologists (Inc.), Mr D. J. Philip, Pathology Department, Middlemore Hospital, Auckland.

Subscription to this JOURNAL is five shillings per year or two shillings per copy, post free.

ADDRESSES

If the address as printed on this envelope is incorrect, please notify the Editor as soon as possible of your correct address.

A CASE OF INFECTIOUS MONONUCLEOSIS COMPLICATED BY HAEMOLYTIC ANAEMIA

M. G. HARPER

(*Pathology Department, Waikato Hospital*)

The absence of anaemia in Infectious Mononucleosis is generally accepted; indeed this fact is useful as an aid in differential diagnosis between Mononucleosis and Leukaemia. In a study of 300 cases Reid and Helwig found only 6 cases with an accompanying anaemia. The occurrence of Acute Haemolytic Anaemia in association with Infectious Mononucleosis has rarely been reported. Over the last few years several cases have been described; Bean in a useful article in the Australian Medical Journal (1957) reviewed these 13 cases and reported one other. Since then, so far as I can ascertain, there have been no others reported. Apparently no cases have been reported in New Zealand.

CASE

Mrs D. Age, 35. European.

HISTORY

Prior to admission, was confined to bed for three weeks complaining of tightness in chest, nausea, constipation, feverishness and intermittent temperatures in the afternoons and evenings up to 102°; stated to have looked jaundiced for several days before admission. Was treated as influenza and five days before admission was given sulpha drugs.

On admission looked pale, but not obviously jaundiced; no sore throat or cough; no hepatomegaly, spleen large with firm edge, some palpable glands in neck. She gave no previous haemolytic history and as she is an orphan her history could not be investigated as fully as we would have liked. Next day developed a slight icterus in the conjunctiva. Though she had reacted severely to sulpha in the past, this was ruled out as a cause of the haemolysis. This point will be explained later.

LABORATORY FINDINGS

Figure I represents a general survey of the haematological findings from admission to discharge.

The figure shows the rise in haemoglobin and parallel fall in reticulocytes as treatment progressed. After splenectomy the change is quite dramatic.

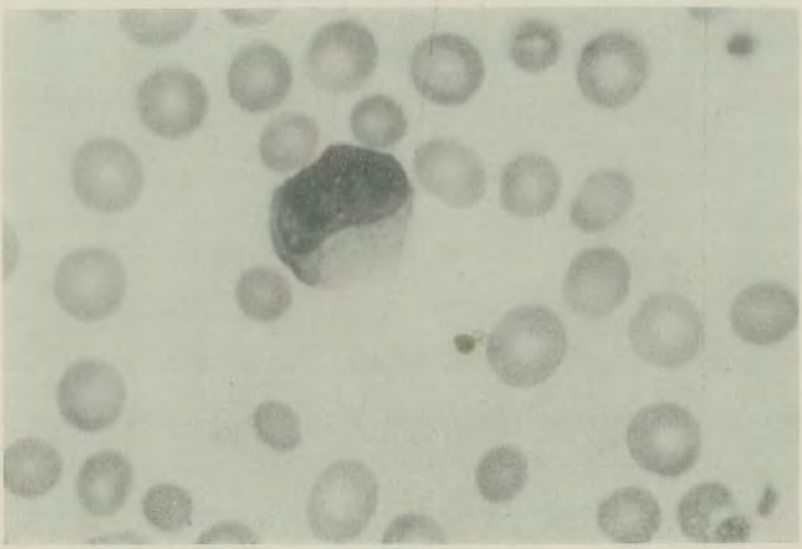
The blood film on admission showed normochromic red cells, but marked anisocytosis and many polychromatic cells and micro-

FIGURE I

DATE	RBC. in Mill.	Hb. gm.	RETIC.%	WBC/cmm.	GLANDULAR FEVER CELLS	BILIRUBIN mgm.
14. 5. 59	2.2	5.0	20	8,000	35	1.5
18. 5. 59	-	8.8	20	5,000	40	1.4
20. 5. 59	3.5	8.5	20	-	-	-
23. 5. 59	3.6	10.0	18	8,000	28	-
27. 5. 59	-	10.0	15	-	-	-
29. 5. 59	3.2	10.5	10	-	-	1.4
3. 6. 59	3.3	10.5	12	11,000	22	1.7
8. 6. 59	-	10.0	14	-	-	-
11. 6. 59	-	9.5	14	-	-	-
15. 6. 59	-	10.5	11	5,000	5	2.0
18. 6. 59	-	10.5	9	-	-	-
27. 6. 59	-	11.0	7	-	-	-
2. 7. 59	-	11.6	7	-	-	-
5. 7. 59	-	11.6	7	-	-	-
		SPLENECTOMY				
7. 7. 59	-	15.2	6	-	-	3.5
9. 7. 59	-	14.5	5	-	-	2.8
15. 7. 59	-	15.2	0.5	-	-	2.4
6. 8. 59	-	14.0	0.5	-	-	-
		DISCHARGED				

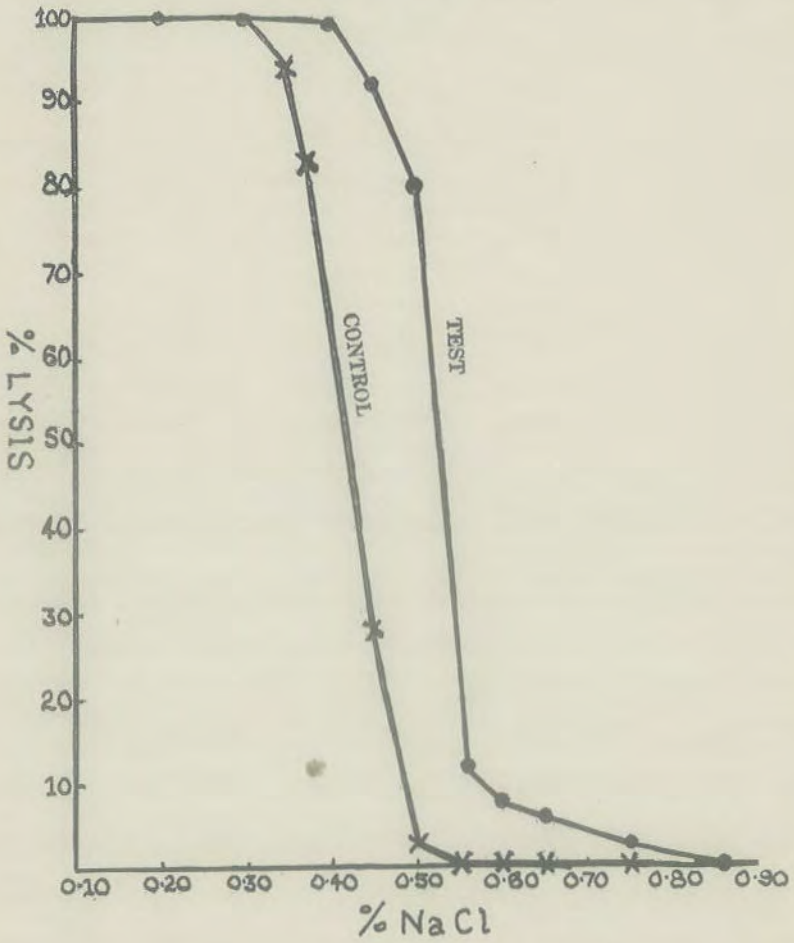
cytes. There were many microspherocytes as well as typical glandular fever cells present. Platelets were normal.

The following photomicrograph shows a microspherocyte and a glandular fever cell.



Dacie's colorimetric method for osmotic fragility showed a considerable increase in fragility compared with a normal blood control. Initial visible haemolysis was just detectable in 0.75% NaCl., and was 4% when measured colorimetrically. At 0.50% haemolysis was 78% compared with the normal of 5%. Haemolysis was complete at 0.40%, the normal at 0.30%. Three fragility tests were carried out and as the resulting curves showed little variation, the results were averaged. The resulting curve is shown in Figure II.

FIGURE II



OTHER LABORATORY TESTS

Indirect Coombs and Direct Coombs Tests were negative when tested with cold and warm saline as described by Dacie. Cold agglutinins were also negative.

The Paul-Bunnell test proved negative and remained negative on repeated tests. After the third week of hospitalisation weekly tests were carried out in case of a late titre developing, but all were negative.

Siderocytes were 0.2% and Heinz Bodies negative.

URINALYSIS

Bile pigments were present in normal amounts and urobilinogen was slightly increased.

TREATMENT

The clinical and laboratory findings together suggested that the anaemia was probably a congenital haemolytic anemia. Therefore after a transfusion the patient was subjected to splenectomy.

Following this, her haemoglobin remained steady at about 14.5gms. and reticulocytosis returned to normal. Glandular fever cells had disappeared from the peripheral blood before splenectomy was undertaken.

The spleen removed at operation weighed 410gms., which is rather more than twice normal, was firm and deep red. Histological examination showed the appearances seen characteristically in haemolytic anaemia of congenital type and no evidence of glandular fever was seen.

The patient was discharged fit and well after three months, showing no evidence of haemolytic process.

DISCUSSION

The laboratory findings clearly demonstrate a condition brought about by two distinct haematological processes; on the one hand haemolytic anaemia, on the other glandular fever. The question then is one of relationship—did the glandular fever bring about the haemolysis, or cause apparent latent congenital haemolytic anaemia to become manifest, or are they independent conditions?

The clinical features, namely, the presence of jaundice for a few days before admission, but which had faded by the time the patient entered hospital, the moderately severe anaemia and high reticulocyte count, when considered together suggest the occurrence of a transitory haemolytic crisis in the second week of the illness. If this were transitory it explains why the bilirubin and

urinary urobilinogen were only slightly increased when the patient was subsequently examined in hospital.

Though the diagnosis of glandular fever was quite definite with 40% characteristic abnormal mononuclears, repeated Paul-Bunnell tests all proved negative. It is of course well known that the Paul-Bunnell test is not always positive. Kaufman (1944) in a series of 78 cases found 75% positive at varying intervals, some as early as the third day, some not until the second month and some not at all.

With regard to the anaemia, which was moderately severe, this was of the haemolytic type as shown by spherocytes in the blood film, raised bilirubin, reticulocytosis and increased fragility. In looking for a cause, other than the glandular fever for the haemolysis, Sulpha was ruled out because jaundice was apparent before Sulpha was administered; moreover such a cause is rare and more common in children than adults (Whitby and Britton 1953). As previously stated, Coombs and cold agglutinins were negative. This is against the diagnosis of acquired haemolytic anaemia and more in favour of the congenital type. Neber and Dameshek (1947) found that no antibodies can usually be demonstrated in congenital haemolytic icterus with bovine albumin solution; the coombs test is usually negative (Young, Platzer, Erwin and Izzo 1951). Another supporting fact in favour of the congenital type is that spherocytes were present in the blood film of one of her children. Unfortunately, because Mrs D. was an adopted child, no further family history could be investigated.

Briefly reviewing the literature, Bean's summary of the cases reported showed that two were congenital types with family history of anaemia, recurring jaundice and spherocytosis. In one, the fragility was increased only during the episode, in the other it was persistently increased. The Coombs and Haemagglutinin tests were negative. The other twelve cases were examples of acquired haemolytic anaemia, showing positive haemagglutinins in six cases, negative in three and not discussed in three. The Coombs test was positive in two cases; not discussed in the rest. Fragility was increased in four cases, normal in four and not discussed three. All cases had positive Paul-Bunnell titres ranging from 128 to 3,072. A lymphocytosis was found in 10 cases, a neutrophilia in 1; not discussed in the rest.

In summary, two of the cases were examples of congenital haemolytic anaemia aggravated by an infection, namely, mononucleosis. The case described here resembles these, as we were unable to demonstrate any evidence of the presence of acquired haemolytic antibody. We think this is a case of latent haemolytic anaemia which became manifest as a result of an infection.

ACKNOWLEDGMENTS

The author wishes to thank Dr. Russell for the advice and guidance during the preparation of this paper, Dr. Sutherland for the clinical history, Mr D. F. Henry and Mr B. Wilkinson for the photomicrographs and Mr Graham, Medical Superintendent, for permission to publish this paper.

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JUNIOR ESSAY COMPETITION

Entries for this competition close with the Editor on June 20th, 1960. Entrants must state for which section they wish to enter and give their name and address on a separate piece of paper. All trainees are eligible for this competition.

TECHNICAL SECTION:

Descriptions of methods or techniques in use in the Laboratory.

ESSAY SECTION:

Essays on historical or general aspects of Laboratory work.

A prize of £5/5/- is offered for the best entry in each section.

OBITUARY

REX TRAVERS DEANHEAD AITKEN

Rex Aitken, a well known bacteriologist, died suddenly in Auckland on the 20th December, 1959, at the age of 43.

He was the only son of Mr and Mrs J. D. Aitken, of New Plymouth, and was educated in Wanganui and at New Plymouth Boys' High School. On leaving school he joined he staff of the New Plymouth Hospital Laboratory and in 1937 transferred to the Palmerston North Hospital Laboratory.

He volunteered for overseas service, leaving New Zealand with the first New Zealand General Hospital in the Second Echelon as Bacteriologist. After service in England, Greece and Egypt, where his enthusiasm and reliability was an inspiration to others, he was recalled to New Zealand to assist in the establishment of the Army laboratory services in the Pacific. He was commissioned and, after service in the Pacific, left the Army in 1944.

He then attended Auckland University College with a view to studying medicine and at the same time worked in a private medical laboratory. He discarded his idea of taking a medical degree after about a year, but continued in the laboratory, obtaining his Certificate of Hospital Bacteriology in 1947. He was then appointed Charge Bacteriologist at Middlemore Hospital, a position he retained until, in 1951 with Mr Jack Callaghan, he founded Biological Laboratories Limited in Auckland.

He was keenly interested in all aspects of laboratory work, but his particular love was in the invention and building of many types of ingenious laboratory equipment. His technical ability and perfection and his quiet, courteous manner were known to those with whom he came in contact.

Outside his work he had a wide variety of interests, including music, art, politics and motor racing and he was a member of the Northern Sports Car Club. He was a regular competitor in speed trials and hill climbs in his two and a half litre Riley.

He is survived by his wife and stepson.

DR. D. T. STEWART writes:

Rex Aitken went overseas in the 2nd N.Z.E.F. with me as the whole laboratory staff for the 600 bed 1st N.Z. General Hospital. However, what the establishment lacked in numbers was greatly compensated by the quality of the chosen bacteriologist. No one could have wished for a better assistant; he was quiet, reliable, long working, resourceful and quickly picked up un-

familiar work in laboratory diagnosis of tropical diseases. The smooth running of laboratories in such diverse and ill-suited accommodation as a decontamination centre, a tent in Greece and a hotel basement, was in great part due to his initiative and efficiency—as a result of which he was picked to return to organise services in the Pacific and received a well-earned commission. He would have made an excellent pathologist and it is to be regretted that the difficult post-war period turned him from a medical career. Laboratories throughout New Zealand are familiar with the reliable products and services of the firm he helped to found.

CONFERENCE, 1960

The Sixteenth Annual Conference of the Association will be held in Christchurch on June 30, and July 1.

The Conference is to be held in the Preliminary Nursing School and a Trades Display of Laboratory Equipment and other items of interest will be in the adjoining Recreation Hall.

Members of the Association are invited to prepare papers now for presentation to the Conference on the completion of the General Business.

Papers of either a technical or general nature will be welcomed. The usual projection equipment will be available.

A Conversazione at The Princess Margaret Hospital has been arranged for the evening of June 30 and a Cocktail Party at the close of Conference on July 1.

Make your preparations now to visit Christchurch at the end of June.

CHRISTCHURCH CONFERENCE COMMITTEE.

AUCKLAND BRANCH OF THE N.Z. ASSOCIATION OF BACTERIOLOGISTS

The above branch is to hold a one day Conference in the Medical Centre, Auckland Public Hospital, on Saturday, June 4. The Conference will commence at 9.30 a.m. and conclude at 5.00 p.m. A 'Dine and Dance' will be held in the evening. The subject of the Conference is a Symposium on Clinical and Laboratory aspects of anticoagulant therapy and general coagulation disorders. Several competent speakers have been approached to present papers concerning the various aspects.

Anyone who wishes to attend is welcome and enquiries should be sent to the Secretary, Mr K. Watts, Princess Mary Laboratory, Auckland Public Hospital, Park Road, Auckland.

INTERMEDIATE EXAMINATION FOR HOSPITAL LABORATORY TRAINEES, OCTOBER, 1959

NATIONAL HEALTH INSTITUTE, WELLINGTON

Examiners: Dr. M. R. McLean, Mr G. W. McKinley.

THEORETICAL EXAMINATION

Wednesday, October 28, 1959, 09.30 a.m. - 12.30 p.m.

Time allowed: Three hours.

Answer all questions.

1. *List* the *main* causes of false positive and false negative agglutination reactions that may trouble you during the technique of A B O Grouping.
   In each case state briefly:
   (a) How you would recognise a false agglutination reaction.
   (b) What you would do to ensure that you obtained correct results. (20 marks).
2. Describe the procedure you would follow to make a bacteriological diagnosis of tuberculosis of the kidney. (15 marks.)
3. (a) How would you sterilise:
   (i) nutrient agar.
   (ii) 5% glucose solution.
   (iii) 10 ml. all glass syringe for venipuncture.
   How would you ensure that these articles are sterile?
   (b) How would you prepare chemically clean glassware.
   (c) What quantity of sodium chloride would you add to a litre of water to make normal N/5 Solution.
   Atomic weights Na — 23
   Cl — 35.46 (15 marks.)
4. Describe the procedure you would follow in the examination of a specimen of pleural fluid. (15 marks.)
5. Describe the principle and method of estimation of the T.N.P.N. of blood. (15 marks.)
6. Explain briefly the meaning of the following terms:
   (a) Anisocytosis.
   (b) Punctuate basophilia.
   (c) Specific gravity.
   (d) Hypobromite.
   (e) A chemically normal solution.
   (f) pH.
   (g) Xanthochromia. (20 marks.)

PRACTICAL EXAMINATION A.

Wednesday, October 28, 1959, 2.30 p.m. - 4.0 p.m.

BACTERIOLOGY

1. Examine the throat swab provided. Culture and perform sensitivity tests. This is to be completed tomorrow.
   (S. aureus. Str. haemolyticus.)
2. The culture provided was from a dysentery stool. Identify as far as possible the causative organism. Briefly list the steps you take. This is to be completed tomorrow.
   (S. typhi — murium.)

3. Examine the urine specimen provided and report on:
   a. Albumin (qualitative) — Trace present.
   b. Sugar (qualitative) — Sugar present approx. 1%.
   c. Deposit — RBC 100, WBC 4 per H.P.F.
   d. Culture. This to be completed tomorrow.
   (Str. faecalis.)

PRACTICAL EXAMINATION B.

Wednesday, October 28, 1959, 4.0 p.m. - 5.30 p.m.

BIOCHEMISTRY

1. Determine the normality of the approximately tenth—normal solution of NaOH, by titration with Standard N/10 HCl.
   Show your calculation in full and state how one litre of accurate N/10 NaOH would be prepared from this solution.
   (Normality of the NaOH — 0.126.)
2. Estimate the chlorides as NaCl in the specimen of C.S.F.
   (Chlorides as NaCl: 585 mg %.)

PRACTICAL EXAMINATION C.

Thursday, October 29, 1959, 9.30 a.m. - 11.0 a.m.

COMPLETION OF BACTERIOLOGY

1. Complete the bacteriology from yesterday.
2. Stain the sputum film provided by the ZIEHL-NEELSEN method and report on it. Leave the film for inspection.
   Z.N. film was positive for M. tuberculosis—moderate numbers.)

PRACTICAL EXAMINATION D.

Thursday, October 29, 1959, 11.0 a.m. - 12.30 p.m.

HAEMATOLOGY

1. Determine the A.B.O. Groups of the 3 washed red cell suspensions X, Y, Z. Briefly list the steps you take.
   (X = AB, Y = O, Z = B)
2. Report on the blood films provided. State what clinical conditions they may indicate. No differential count required.
   (1. P.A., 2. Hypochromic anaemia, 3. Malaria, 4. Erythroblastosis foetalis.)
3. Estimate the Hb value, make a film and report on the differential count and red cells appearances of the blood specimen provided.
   (Hb: 18.6 g. %. Differential: Polymorph neutrophils 59%, Polymorph eosinophils 4%, Lymphocytes 32%, Monocytes 5%. Red cells normal.)

ORAL EXAMINATION

The following subjects were discussed.

Dr. McLean:

Venipunctures; finger and heel pricks; pH definition; pH in relation to growth of bacteria; leukaemias; platelet and reticulocyte counts: disposal of sputa; blood sugar methods; occult blood; haemoglobin estimations; standard errors in Hb and RBC estimation.

Mr McKinley:

Seitz filters, pH apparatus; normal solutions, colorimeters; bile pig-

ments; nomenclature of bacteria; conditions favouring growth of Brucella abortus; milk and water analysis; test for di-acetic acid; Stills; thermoregulated apparatus; urea estimation; protein C.S.F.; Sterilization; composition of reagents in everyday use in a laboratory; Test meals; principles involved in tests in everyday use.

The following candidates were successful:

Miss M. A. HARMAN, Wellington Hospital.
Miss F. E. S. WRIGHT, Timaru Hospital.
Mr M. L. HARRIS, Medical School, Dunedin.
Miss G. M. COLLYER, Christchurch Hospital.
Miss B. A. HOPCROFT, Nelson Hospital.
Miss M. J. INCH, Nelson Hospital.
There were no unsuccessful candidates.

FINAL EXAMINATION FOR THE CERTIFICATE OF PROFICIENCY IN HOSPITAL LABORATORY PRACTICE

Tuesday, March 8, 1960.

Examiners: Dr. D. N. Allen, Dr. J. T. O'Brien, Mr J. T. Murray.

WRITTEN EXAMINATION

Time allowed: Three hours.
Five questions, all to be attempted.

(1) In using a spectrophotometer or photoelectric colorimeter, what precautions must be taken to ensure that the results are accurate. What is the difference between the terms transmittance percent (transmission percent) and optical density.
What is the relationship of each of these terms to concentration. (18 marks.)

(2) Write a short general account of methods used for determining Albumin and Globulin fractions in serum. What findings would you expect in multiple myeloma. (18 marks.)

(3) Write notes on: (1) Numerical Aperture.
(2) Empty magnification.
(3) Cleaning of Microscope Objectives.
(4) Achromatic lens. (12 marks.)

(4) (a) Give an outline of the current methods of virus isolation and identification. (10 marks.)
(b) What are the following and for what purpose are they used in Bacteriology:
(1) Cardiolipin.
(2) Para-aminobenzoic acid.
(3) Bacitracin.
(4) Sabouraud's Medium.
(5) Desoxycholate-citrate agar. (15 marks.)

(5) Write *briefly* on the purpose of the Indirect Coombs Test.
Describe *in detail* the technique.
Mention *briefly* the possible causes of a false negative result. (27 marks.)

PRACTICAL 1

Tuesday, March 8, 1960, 2.30 p.m. - 5.30 p.m.

BIOCHEMISTRY 1

(1) Estimate the bilirubin in the specimen of serum (A) supplied. Briefly

describe your method and calculation of results. How does haemolysis affect the results obtained by your method? What do you consider to be the degree of accuracy obtained by your method in (a) using normal amounts of serum (0.3 - 1.0 ml), and (b) using micro amounts of serum such as are obtained from cutaneous puncture in infants.

(2) Standardize the stock solution of Potassium Permanganate (B) supplied. Show your calculations. Briefly list any important points in preparing and standardizing this solution.

BACTERIOLOGY I

(1) Make the appropriate examination on the two specimens of sputum provided (C) and (D) and describe in detail the technique of further examinations you would normally use.
(C) T.B., (D) Haemolytic Streptococci and Pneumococci.)

(2) The specimen of C.S.F. provided (E) is from a patient with clinical meningitis. Examine *bacteriologically*.
(H. influenzae.)

(3) Examine and identify the culture (F) provided.
(S. sonnei.)

PRACTICAL II

Wednesday, March 9, 1960, 9.30 a.m. - 12.30 p.m.

BACTERIOLOGY II

(1) Complete questions (1), (2) and (3) from the previous day.

(2) Identify and write notes on the exhibits provided:
Slide G—(G. lamblia).
Slide H—(Oxyuris vermicularis).
Exhibit J—(Nagler plate).

HAEMATOLOGY I

(1) Name and use sketches to illustrate the various forms of P. vivax found in the blood and their functions in the life cycle of the organisms.

(2) Sketch the ruled area of the haemocytometer of "Improved Neubauer" pattern and give the important dimensions.

(3) Do a direct Coombs test on the blood (K) provided and report your finding.

(4) Determine and report the ABO and Rh (D) grouping of Blood (L).
(Group AB, Rh (D) Negative.)

PRACTICAL III

Wednesday, March 9, 1960, 2.30 p.m. - 5.30 p.m.

BIOCHEMISTRY II

(1) Specimen (M) is venous blood obtained from a patient showing slight cyanosis. What is the abnormal pigment causing the cyanosis? Show how you arrived at your conclusions and if you used any confirmatory tests.
(M = Methaemoglobin.)

(2) Estimate the amount of urobilinogen in the urine specimen (N) which is a portion of a 24 hour specimen. The total 24 hour vol. is 1600 ml. Calculate the amount of urobilinogen excreted in 24 hours.

(3) Identify and write notes on the exhibits provided:
P. Sintered Glass Filter.
Q. Conway Diffusion cell.
R. Two optical filters.

S. Difraction grating.
T. Specific gravity bottle.
V. Oswald Van Slyke pipette.

HAEMATOLOGY II

(1) Do haematological screening tests on the blood (W) provided and outline any further examinations that your findings would suggest might be appropriate.
(W = blood from a normal newborn baby.)
(2) Report on the films X, Y and Z.
X = Ovalocytosis.
Y = Malaria.
Z = Filaria.

ORAL EXAMINATION

The following were asked in the Orals Examination:—
Thermo regulated equipment; Cross match reactions; Autoclaves; Throat swabs; Haematoxylin; Colorimeters; Hb. standards; Prothrombin time; Thromboplastin generation test; Paraffin wax; Serum Na. (Chemical); Phosphatase; pH; Titratable acidity; Cooley's Anaemia; Sickle cells; Hb. F; Laboratory accidents; Units of weight and measure; Principles of flame photometry; Cleaning glassware; Detergents.

Of the 12 candidates the following satisfied the examiners:—
Mr E. B. CLARK, Auckland.
Miss D. S. O'SULLIVAN, Auckland.
Miss H. G. PREBBLE, Auckland.
Mr T. R. G. SCOTT, Auckland.
Mr J. C. THOMAS, Auckland.
Miss P. V. HARPER, Greymouth.
Mr M. J. LYNCH, Wellington.

FINAL EXAMINATION FOR THE CERTIFICATE OF PROFICIENCY IN HOSPITAL LABORATORY PRACTICE

Tuesday, March 22, 1960

Examiners: Dr. T. H. Pullar, Dr. W. S. Alexander, Mr D. Whillans.

WRITTEN EXAMINATION

Time allowed: Three hours.

Six questions, all to be attempted.

(1) Tabulate the differential features of Entamoeba coli and Entamoeba histolytica. Describe a method for the concentration of parasitic cysts and ova in the faeces.
(2) Give an outline of the usual range of "Liver function tests" employed in your laboratory. Full details of technique are not required but for each test indicate which aspects of liver function is tested and the significance of abnormal results.
(3) A patient with suspected glandular fever is sent to the laboratory for investigation. Describe the tests which might be useful, and the findings in a positive case.
(4) Describe a method suitable for the estimation of the serum bilirubin in a newborn infant. What is the value of this test in cases of erythroblastosis foetalis?

(5) Describe the microscopic and cultural characteristics of Microsporon canis. Indicate the methods employed in obtaining specimens for examination and outline your procedure for exact identification.
(6) Write short notes on the following:
(a) Haematoxylin.
(b) Haemophilia.
(c) Haematocrit.
(d) L.E. cell.
(e) Lambert-Beer Law.

PRACTICAL I

Tuesday, March 22, 1960, 2.30 p.m. - 5.30 p.m.

BACTERIOLOGY AND HAEMATOLOGY

1. Specimen A is a culture from a swab taken from a carbuncle on the back of a 70-year-old man. Take steps to identify the casual organism and determine its pathogenicity and antibiotic sensitivities.
(Staphylococcus aureus, Coagulase positive, Insensitive to Penicillin only.)
2. Specimen B is a culture of an organism recovered from the faeces of a child aged 14 years. Proceed to the identification of this organism.
(S. bovis morbificans.)
3. Specimen C is a high vaginal swab. Carry out full bacteriological examination.
(Cl. welchii, E. coli, Strep. faecalis.)
4. Report on blood slides H.I.J.
(H= Glandular fever, I = Lymphatic leukaemia, J = P.A.).
Questions 1, 2 and 3 are to be completed tomorrow.

BIOCHEMISTRY

1. Examine specimen D and determine sugar, chlorides and proteins.

PRACTICAL II

Wednesday, March 23, 1960, 9.30 a.m. - 12.30 p.m.

BACTERIOLOGY AND HAEMATOLOGY

1. Complete work from yesterday.
2. Do complete blood counts on Specimens E and F including indices (show calculations).
(E = Normal blood. F = Macrocytic anaemia.)

BIOCHEMISTRY

1. Determine blood uric acid on Specimens K, L.
2. Write short notes on "spots" as set out.
1. Abbe dark ground condenser.
2. Tissue grinder.
3. Ascaris lumbricoides.
4. Tricolour red filter.
5. P.P.D.
6. Standard ground glass stopper.
7. Locating clip for photometer tube.
8. Vacuum photo electric cell.

9. Actinomycetes.
10. L.E. cells.
11. Erythroblastosis foetalis.

PRACTICAL III

Wednesday, March 23, 1960, 2.30 p.m. - 5.30 p.m.

1. Complete unfinished work.
2. Examine serum G supplied and report on its suitability for use as blood grouping serum.
   (G = Anti A. Titre 1:64.)

ORAL EXAMINATION

The following were asked in the Oral Examinations:—

Spectrophotometer; Urea estimation; Hamburger Shift; Potassium estimation; Postage of blood sugar specimens; Variation in TNPN and blood urea levels; Protein precipitates; Differentiate between pH and titratable acidity; Indicator action and ranges of indicators; Sharpening microtome knife; Difference between normal chemical and normal physiological solution; Molar solutions; Preparation of oxalate tubes; Benedicts solution; Buffers; Protein fractions in plasma; Freeze drying; Sterilisation of talcum powder; Use of Topfers reagent and phenolphthalein; Steam sterilisation; Urea by hypobromite method; Pin worms; Hot air sterilisation; Angle head centrifuges; Kjeldahl; Transmission and density; Postal regulations concerning specimens; Duboscq colorimeters; Calibration of haemoglobinometers; Flame photometers; Analytical volumes; Centrifuges; Thermometers; Preparation of normal saline; Diatase in urine; Protein in urine; Carboxyhaemoglobin; Liebermann Burchard reaction; Electrophoresis.

Of the 13 candidates the following were successful:—

Miss M. J. L. BUCHANAN, Auckland.
Miss P. D. A. CARSON, Wellington.
Miss J. M. CATER, Wanganui.
Miss S. I. CHAMBERS, Auckland.
Mr M. J. CHURCHOUSE, Auckland.
Miss N. J. ECCLES, Auckland.
Mrs A. K. FERGUSSON, Wellington.
Mr D. F. HENRY, Hamilton.
Miss P. M. STENHOUSE, Christchurch.
Mr S. W. ENTWHISTLE, Christchurch.

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SUBSCRIPTIONS

Members are reminded that subscriptions to the Association for the year ending 31st March, 1961, are payable now to the Treasurer.

Mr D. J. Philip
Pathology Department
Middlemore Hospital
AUCKLAND.

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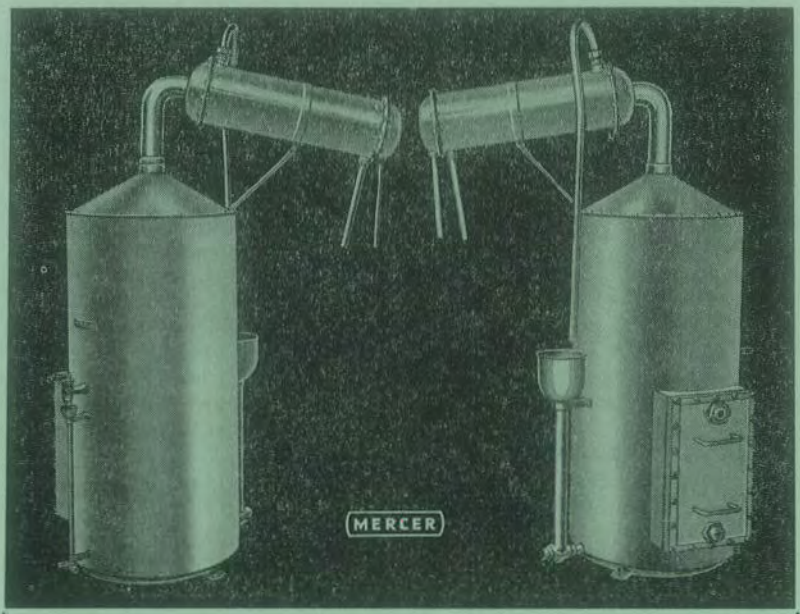

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