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EDITORIAL

MENTAL HEALTH IN MALAYA

On paper, Malaya's provision for psychiatric beds is approximately nine per 10,000 population. This compares favourably with the W.H.O. estimate of five beds per 10,000 population being available in Asian countries, and one bed per 10,000 population available in Africa. But this is below the figure for developed countries like the United Kingdom and the U.S.A. where about thirty beds per 10,000 population are available. The figure recommended by the W.H.O. is ten beds per 10,000 population as a basic minimum(1).

This does not mean however that we ought to have larger mental hospitals or more mental hospital beds. The two in Malaya, at Tanjong Rambutan and Tampoi, with about 4,500 and 1,900 patients respectively, are already large institutions by any standard. Efficient administration in any large institution is never easy. The present trend is towards the reintregration of Psychiatry with General Medicine(2) and towards "community care"(3). More psychiatric beds in psychiatric units in the general hospitals would be useful. With modern methods of physical treatment — and most of these are available in Malaya — most of the psychiatric problems met with can be tackled in such psychiatric units. Most of these patients do not need to stay very long in hospital. The average length of stay of these acute psychiatric cases would be of the order of about 14 weeks(4). With early discharge possible, admission to a psychiatric unit in a general hospital would be more acceptable to the population at large and would relieve the overcrowding in the already overcrowded mental hospitals.

Such a unit is already in existence in the General Hospital, Penang. More units should be set up in other centres in the country. Kuala Lumpur, the Federal Capital, can boast of a neuro-surgical unit, but has no proper psychiatric facilities to offer as yet. Patients from the east coast have to travel over large distances to Tampoi for their treatment.

To-date there are only three qualified psychiatrists in Malaya. This is perhaps a reflection of the unpopularity of this speciality among the medical profession. But there is shortage also of trained psychiatric nurses. This is perhaps partly due to the lack of inducement offered by the government in this branch of the service. In the United Kingdom the trained psychiatric nurse is better paid than the counterpart in general nursing. In Malaya this extra qualification does not entitle the male nurse (hospital assistant) to any extra remuneration, nor does it confer on its holder, male or female, any extra advantage in promotion. Surely, one answer to this unpopularity and staff shortage in this branch of the service would be to make the conditions of service more attractive by offering better pay and better chances of promotion.

There is a great deal of ignorance and superstition, fear and prejudice associated with mental illnesses in the minds of the public. Admission to a mental hospital, or sometimes, even merely consulting a psychiatrist, would stigmatise a person in the eyes of his community. On the other hand, the importance of psychiatric disorders as a cause of human illness and suffering is by no means neglibible. Various surveys done in western countries estimate psychiatric disorders as a cause of between 30% – 70% of symptoms for which patients go to see their doctors(5,6,7). The extent of the problem in Malaya is not exactly known as no survey has ever been done. Such a survey will be required before any rational planning for the provision of psychiatric services in the country can be made. If psychiatric problems constitute such a large proportion of the cases the doctor has to deal with, Psychiatry must be given more emphasis in the education of the doctor than has hitherto been given.

The ignorance, fear, superstition and prejudice in the minds of the general public can only be dispelled by means of education, and here the family doctor, public health and education authorities have important roles to play. In Malaya almost all the patients sent to psychiatric hospitals go there because of some gross behaviour disorders, often anti-

social in character. Ninety percent of the patients admitted to psychiatric hospitals are schizophrenics, many of whom have been arrested by the police. Few patients come for psychiatric treatment of their own accord.

Not all sections of the population make full use of the psychiatric facilities available. The Malays are under-represented in the population of psychiatric hospitals. This is certainly not because they are free from psychiatric disorders. Surveys done in various countries show that the "functional" psychoses occur in almost the same frequency in all the communities studied. The Malays constitute the bulk of the rural population where access to the centres where facilities for treatment are available is difficult. This inaccessability together with prejudice and fear is most probably the cause of this under-representation. This fear and ignorance must be removed and a positive attitude towards psychiatric disorders must be fostered before "community care" of psychiatric patients can be made possible.

Positive public support for psychiatric illnesses, either in the form of public bodies comparable to the Malayan Association for the Prevention of Tuberculosis, Society for the Blind, etc., or in the form of voluntary service, or in the form of cash contributions, will do a great deal to dispel the fear and prejudice in the minds of the people and to remove the stigma attached to these illnesses. Such support would improve the lot of the psychiatric patient while he is in the hospital and help in his rehabilitation after discharge.

BIBLIOGRAPHY:

1. World Health Organisation, Technical Report Series, No: 73 of 1953.
2. Lewis, A. J., (1963), 'Medicine and Affectations of the Mind,' B.M.J., **ii,** 1549.
3. Lancet (1960), Leading Article, 'Community Mental Care?', **ii,** 857.
4. Tan, E. S., (1964), 'Characteristics of Patients and Illnesses Seen at Tampoi Mental Hospital,' Med. J. Malaya, **19.** This paper is in same issue as this editorial.
5. Watts, C. A. H., (1956), 'Neurosis in General Practice,' Royal College of Physicians, Edinburgh.
6. Leighton, D. C., (1956), 'The Distribution of Psychiatric Symptoms in a Small Town,' Am. J. Psychiat., **112,** 716.
7. Rennie, T. A. C. et al., (1957), 'Urban Life and Mental Health,' Am. J. Psychiat., **113,** 831.

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CHARACTERISTICS OF PATIENTS AND ILLNESSES SEEN AT TAMPOI MENTAL HOSPITAL

(A Preliminary Report)

by

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Tampoi Mental Hospital is one of the two psychiatric hospitals serving Malaya. It is situated just North of Johore Bahru town, and at the time of writing has just over 1,900 patients. This hospital was built by the Johore State Government in 1939 to serve only the State of Johore, but it now takes patients from six of the eleven states of Malaya, viz., Johore, Malacca, Negri Sembilan, Pahang, Trengganu and Kelantan. The hospital serves a population of just over 3,000,000 people. The building was put to military use during World War II and was not used as a hospital again until 1952.

It is proposed to examine in this paper some of the characteristics of the patients and the illnesses seen at this hospital in the year 1963 and to discuss these findings with regard to the practice of psychiatry in Malaya.

Population

From 473 patients at the end of the year 1952, the population has increased to the figure of 1,911 patients by the end of the year 1963. (Table I). There has been a steady increase of about 100 patients each year in the last eight years. This however is to be contrasted with the progressive increase of total admissions per year, from 473 in the year 1952 to 1,321 in the year 1963. This means that the increased admissions have been offset by a larger number of discharges per year, i.e., there is a larger turn-over of patients with the increased admission rate, to give a fairly steady nett increase of annual population. With the absence of any drastic social changes in the country over this period of time, the maintenance of this steady nett annual gain in population, despite the larger volume of admissions, is most probably attributable to nosoconial factors. In the last few years there has been an improvement in the staffing, availability of drugs and other facilities, which are the most probable explanations of this phenomenon.

TABLE I

Population in Tampoi Mental Hospital

Year	Number of Admissions	Population on 31st December.
1952	473	473
1953	654	836
1954	589	961
1955	781	1,172
1956	737	1,235
1957	870	1,340
1958	981	1,446
1959	1,065	1,501
1960	1,160	1,630
1961	1,156	1,739
1962	1,268	1,804
1963	1,321	1,911

Distribution of Patients by State

(Table II) Although Johore constitutes only 34.9% of the population served, 52.2% of the patients admitted in the year 1963 are from this state. On the other hand, while the east coast states of Pahang, Kelantan and Trengganu make up 11.4%, 18.4% and 10.2% of the population served respectively, the patients from these states are only 9.5%, 9.7% and 4.2% of the admission for the year 1963 respectively. It is to be noted that there is no direct railway line from Trengganu to Johore Bahru, and this is the chief means of transportation of the patients from these

TABLE II

Admissions by States in 1963

State	Population in 1,000	Percentage	Admissions	Percentage
Johore	1,144	34.9	690	52.2
Malacca	361	11.3	91	6.8
N. Sembilan	452	13.8	232	17.6
Pahang	374	11.4	125	9.5
Kelantan	604	18.4	127	9.7
Trengganu	336	10.2	56	4.2
Total ...	3,271	100.0	1,321	100.0

$X^2 = 309.6$, p = less than 0.01

east coast states to Johore Bahru. Although the existing roads in these states are fairly good they are fewer. The population in these states is almost entirely rural.

Racial Distribution

Whereas the Malays constitute 61.5% of the population served, they made up only 40% of the admission in 1963. The Chinese who are only 30.5% of the population made up 45.8% of the admission for the year. The Indians are the racial group who appear to be making the best use of the facilities available, as observed also in the other branches of the medical service, notably in district hospitals and maternal and child welfare clinics. While constituting only 6.5% of the population served, they form 14.2% of the admissions for the year 1963. There has been no admission from any racial group other than these three (Table III).

TABLE III

Admissions by Race in 1963

Race	Population in 1,000	Percentage	Admissions	Percentage
Malays	2,013	61.5	528	40.0
Chinese	986	30.5	605	45.8
Indians	217	6.5	188	14.2
Others	55	1.5	—	—
Total ...	3,271	100.0	1,321	100.0

$X^2 = 326.2$, p = less than 0.01

Sex Distribution

Of the 1,321 patients admitted during the year, 851 are males and 470 are females. This shows the male predominance which is seen also in the population of the country.

Modes of Admission

Admission to a mental hospital in this country is governed by the Mental Disorders Ordinance of 1952 and by the Criminal Procedure Code of 1951. The patient may be admitted either as a voluntary patient under section 39 of M.D.O. or as a certified patient under Section 37 or 38 of the M.D.O. The certified patient is brought for certification either by the relatives, or by the police when the relatives are unavailable or unable to bring the patient themselves. A person suspected or being mentally deranged may also be ar-

TABLE VI

Discharges

Cohort of 200 Patients Admitted in August and September, 1963.

AGES / TIME	Below 10 M	Below 10 F	11 — 20 M	11 — 20 F	21 — 30 M	21 — 30 F	31 — 40 M	31 — 40 F	41 — 50 M	41 — 50 F	51 — 60 M	51 — 60 F	61 Plus M	61 Plus F	Total	%
End 1 week	–	–	1	–	1	–	2	–	1	–	1	–	–	–	6	3
2 weeks	–	–	2	–	3	–	1	–	–	–	–	–	–	1	7	3.5
1 month	–	–	2	1	18	2	5	1	6	1	4	–	2	–	42	21
2 months	–	–	9	1	7	5	6	6	5	1	3	3	–	–	46	23
3 months	–	–	4	2	8	1	8	2	–	5	1	1	–	–	32	16
6 months	–	–	2	5	8	1	5	3	1	1	1	1	–	1	29	14.5
9 months	–	–	1	–	3	3	–	1	1	–	2	–	2	–	13	7.5
1 year	–	–	1	1	2	–	1	–	–	1	–	–	–	–	6	3
Still in after one year	–	–	1	2	3	3	4	1	1	3	–	–	1	–	19	9.5
T o t a l	—		35		68		46		27		17		7		200	100

Previous Admissions : 61
Readmitted since : 45
Died : 6
Average length of stay : 13.9 weeks.

rested by a police officer and brought to a doctor for certification. The signature of one doctor only is required for the certification of a patient. A person charged with a criminal offence may be remanded to a mental hospital for observation and treatment under section 342, or section 344 of the Criminal Procedure Code, if he is suspected of being mentally deranged and unfit to plead. A person found "guilty but insane" may be remanded "under the Ruler's pleasure" under section 348 of the C.P.C.

In the year 1963, of the 1,321 patients admitted 46% had been arrested and brought by the police to doctors for certification, 42.2% were brought to doctors for certification by the relatives, and only 10% were admitted as voluntary patients. All, except one, of the remand patients were males. (Table IV).

TABLE IV

Modes of Admission

Categories	Number	Percentage
1. Voluntary patients	132	10.0
2. Certified patients:—		
(a) Brought by relatives	551	42.2
(b) Brought by police	613	46.0
3. Remand patients	25*	1.8
Total	1,321	100.0

* all except one are males.

It has to be explained here that the patients are certified by doctors in general or district hospitals with or without a period of observation. Doctors working in mental hospitals are not permitted by the M.D.O. to certify patients for detention. Voluntary patients are admitted on the basis of a written application by the patients themselves and may discharge themselves by giving a seven day notice. The provision here under section 39 of the M.D.O. is very similar to that for "voluntary admissions" under the Mental Treatment Act of 1930 of England and Wales.

Diagnostic Categories

It will be seen from Table V that considering the patients admitted in the second half of the year 1963 almost all the patients were suffering from psychotic illnesses, 90% of these being schizophrenia. When the figures of the patients seen at the Psychiatric Clinic, General Hospital, Johore Bahru, during the same period of time, are considered the neurotics form a larger propotion, but the psychotics still form the majority, with the schizophrenics still predominating. (Table V).

TABLE V

Diagnosis of New Cases Seen in July – December, 1963

Diagnosis	Tampoi Mental Hospital.	Psychiatric Clinic General Hospital, Johore Bahru.
Schizophrenia	659	57
Depressives	25	22
Organic Psychoses	17	9
Neuroses	2	20
Subnormals	3	3
Others	15	2
Total	721	113

Rate of Discharge

The analysis of a cohort of 200 patients admitted in the months of July and August, 1963, showed that 27.5% are discharged by the end of one month, 48.5% by the end of two months, 64.5% by the end of three months, and almost 80% by the end of six months. Only 9.5% are still in hospital by the end of the year. (Table VI).

Discussion

The progressive increase in the patient population in Tampoi Mental Hospital contrasts with the decreasing trend of the population in psychiatric hospitals in the United Kingdom (Norton, 1961; Baker, 1961). This increase is certainly due in part to the population growth. It may also be partly due to the awareness of the treatability of psychiatric illnesses and the availability of facilities for treatment among the general population. This latter is of course an inference which has to be tested by sociological investigations.

The striking features of the constitution of the patient population are the under-repre-

sentation of the Malays and that of the east coast states of Pahang, Kelantan and Trengganu, which are largely rural and very largely Malay. The reasons for this can only be conjectured from these hospital figures, and would again require further sociological survey. What is a fact among the patients who come under the care of the author is that almost all the Malay patients come for admission only after having been treated by "bomohs" (Malay witch-doctors). After the "bomoh" has failed, some would even go to the Chinese "sinseh" (the physician versed in the traditional Chinese art of healing) before coming to hospital as a last resort.

Over 90% of the patients admitted to Tampoi Mental Hospital, and 70% of the patients seen at the Psychiatric Clinic, General Hospital, Johore Bahru, suffered from schizophrenia. 46% of the admissions to Tampoi are cases in which the police were involved. The obvious deduction from these findings is that the patients come to hospital only because their abnormal behaviour had exceeded the "level of tolerance" of the community. The abnormal behaviour is often of an anti-social nature. Only 10% of the patients make use of the provision of section 39 of the M.D.O. coming in as voluntary patients, as compared with 37% in England and Wales before the new Mental Health Act, 1959, came into force (Burn, 1959).

As opposed to the popular conception that once a person is admitted to a mental hospital he is likely to be there for a long time, if not for life, the examination of the discharge rate at Tampoi Mental Hospital showed that there is a high turn-over of the patient population. Over 90% are discharged by the end of one year of admission. The 9.5% who remain make up the nett annual increase of population.

Of this cohort examined, about 30% have previously been admitted and about 20% of those discharged have been readmitted since. This phenomenon is also seen in England and Wales (Jones and Sidebotham, 1962).

The fact that there is this appreciable turn-over of the patient population is surely a cogent argument for the establishment of psychiatric units in general hospitals. The average length of stay of about fourteen weeks would be comparable to that of certain categories of general hospital patients, e.g., orthopaedic, tuberculous or cardiac patients. The advantage of such a unit from the point of view of administration will be the reduction of the pressure of admissions to the already overcrowded psychiatric hospitals. It will be more acceptable to the patients and their relatives as well.

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BIBLIOGRAPHY

1. Baker, A. A., "Pulling Down the Old Mental Hospital," Lancet, 1961, **i**, 656.
2. Burn, J. L., "Recent Advances in Public Health," J.&A. Churchill, London, 1959.
3. Jones, K. & Sidebotham, R., "Mental Hospitals at Work," Routledge & Kegan Paul, London, 1962.
4. Norton, A., "Mental Hospital Ins and Outs," B.M.J., 1961, **i**, 528.
5. The Criminal Procedure Code, Federation of Malaya, (F.M.S. Cap. 6) 1951.
6. The Mental Disorders Ordinance, 1952, Federation of Malaya, No. 31 of 1952.
7. The Federation of Malaysia Year Book, 1963 - 64, Malay Mail Publication.

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SOME SEVERE ANTIBIOTIC RESISTANT STAPHYLOCOCCAL INFECTIONS IN SINGAPORE WITH SPECIAL REFERENCE TO THE USE OF AMINOSIDINE (GABBROMYCINA)

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The development of staphylococcal strains resistant to the commonly used antibiotics has been a subject of great concern all over the world. Finland (1958) pointed out that the day of staphylococcal epidemics of the order of the rampant staphylococcal pneumonia, causing 50% of deaths in the Allied Forces in World War I, might not be entirely over. This was borne out by the recurrence of staphylococcal infection in association with influenzal epidemics in 1941 and again in 1953. Shaffer (1958) stated that in 1946 widespread virulent staphylococcal infections in hospital nurseries affecting both mothers and babies was reported first in England, later in Canada, Australia, United States and finally in the rest of the world. Rountree (1958) ascribed this spread to high infectivity rather than high virulence. She reported that in Australia the spread in the community was not noticed until 1955 when there was sudden increase in the appearance of staphylococcal septicaemia caused by known hospital strains of staphylococci. She reported that a continent wide survey of all soft-tissue infections seen by doctors at their own offices in Australia showed that 45% of all these infections were due to penicillin-resistant staphylococci. Thiry-five to forty per cent were due to type 80 strains known to be the usual hospital variant. The emergence of antibiotic resistant staphylococci is attributable to the introduction of wide spectrum antibiotics. Knight (1958) observed that when new cases of staphylococcal infection were given tetracycline, a very rapid change occurred often within hours in which resistant strains replaced susceptible strains.

The choice of an antibiotic in the treatment of virulent staphylococcal infection is rendered even more difficult by cross-resistance, toxicity of drug, and wide antibiotic resistance of the organisms. Hitherto, antibiotic resistant staphylococcal infections have not constituted a major problem in Singapore but they are increasingly more evident. It would appear from literature such as mentioned above that the problem of antibiotic-resistant staphylococcal infection described in the West and Australia is just about catching up in Singapore and that the cases to be described do not comprise just a local or regional variation of the known ecology of staphylococci.

Aminosidine sulphate (Gabbromycina) is a new antibiotic discovered in the Farmitalia Research Laboratories, Milano by Canevazzi and Scotti (1959). It is a water-soluble oligosaccharide isolated from the metabolites of a strain of Streptomyces (S. Krestomyceticus n.sp.). Although it belongs to the basic antibiotic group which includes streptomcin, neomycin, viomycin, kanamycin and paromycin it differs from them in chemico-physical as well as biological characteristics. (Arcamore, Bertazzoli, Ghione and Scotti 1959). Bearing the formula $C_{23}H_{45}N_5O_{14}2H_2SO_4$, aminosidine sulphate is a white hygroscopic, water soluble powder which is fairly stable in aqueous solution and is quickly absorbed by the parenteral but not by the oral route. High level of the drug is reached in the blood when it is given parenterally, and a high concentration in the kidney is also achieved (Arcamore et al 1959). The manufacturers warn that if the antibiotic is given for long periods exceeding 10 to 15 days, toxic action on the vestibular nerves and kidneys may occur as in the case of other members of the same group, for example, streptomycin and kanamycin. This is particularly liable to result if there is renal insufficiency.

Stein (1926) in Singapore confirmed the broad spectrum of activity against gram positive and negative organisms including many resistant staphylococci. This paper records the use of aminosidine sulphate in several cases of antibiotic resistant staphylococcal infection. It is also the concern of the authors to bring to general notice the increasing incidence of such infections in Malaysia.

Results:

Table 1 shows the cases in the series. This table was prepared 2 months ago; hence follow-ups of the surviving cases have been longer than that stated in the "comments" column. Case No. 5 has since come up for review.

Table 2 shows the sensitivity to various antibiotics. Regretably Gabbromycina discs were not available for testing in all but one case.

Seven cases of severe infection, five of them proven bacteriologically due to staphylococcus aureus, have been treated with Gabbromycina. The two cases of septicaemia in which staphylococci were not cultured, were nevertheless clinically not unlike staphylococcal infections and have been included in the series. All were clinically very toxic, ill patients with high swinging fever of at least eight days duration and had had other antibiotics in full doses with no response before Gabbromycina was used. The Gabbromycina was used as intramuscular injection in dosage 0.5 Gm. 8 hourly in 5 cases and 0.25 Gm. 6 hourly in 2 cases.

In all of them the fever came under control in 2 to 3 days. During therapy transient proteinuria occurred in a few cases. In one patient, blood urea was raised temporarily.

One had a focus of infection in a pilonidal sinus and had had it excised since. Three started off as a lung infection; one probably started as a staphylococcal pyodermia.

The other two had no definite original focus of infection. One came back five months later with a brain abscess and died. Follow-up of the other cases have been from $4\frac{1}{2}$ to 10 months and they have remained well.

CASE I

Name: R.b.D. Sex: female Age: 26 years Ref: N 33231 Staphylococcal Pyodermia and Septicaemia.

Fever with septic spots 2 days. Delirious 1 day.

High swinging fever. Coma III. Multiple septic spots on skin. Spleen not palpable.

Blood cultures were negative but pus swab from skin yielded confluent growth of staphylococcusaureus.

T.W.: 13,500. P.: 85.

She was first started on crystalline penicillin 6 mega and Reverin (pyrrolidinomethyl tetracycline) 275 mg. 6 hourly. There was little response and on the 5th day, erythromycin 1G/day was used instead of the penicillin. Three days of therapy on the reverin and erythromycin combination showed no change and methicillin 4G/day took the place of reverin. In 24 hours the temperature of 101 – 104 came down to 100°F and remained so for 3 days before starting to swing again. Kanamycin 1G and erythromycin 1G/day were used for 5 days with the swinging temperature getting worse. She was then given oxytetracycline 1G, streptomycin 4G and triple sulfa 4G/day. There was temporary improvement for about 5 days only then temperature began to swing again and it was decided to use Gabbromycina. In 48 hours temperature was normal and remained normal. Then patient gradually became able to respond to questions. She received 15G Gabbromycina. On stopping Gabbromycina there was a mild fever for 48 hours but this settled spontaneously.

She was discharged 9 days after completing the Gabbromycina course, well and ambulant. At beginning of Gabbromycina course, blood urea was 40 mg.%, was 47 mg.% on 7th day, 56 mg.% on 9th day but came down to 25 mg.% before discharge. (See Fig. 1). The patient did not come back for follow-up as requested but was re-admitted almost 5 months later with symptoms and signs of a brain abscess. A right carotid arteriogram showed a large avascular region in right temporal region. At craniotomy, the brain was under greatly increased pressure. About 20 c.c.

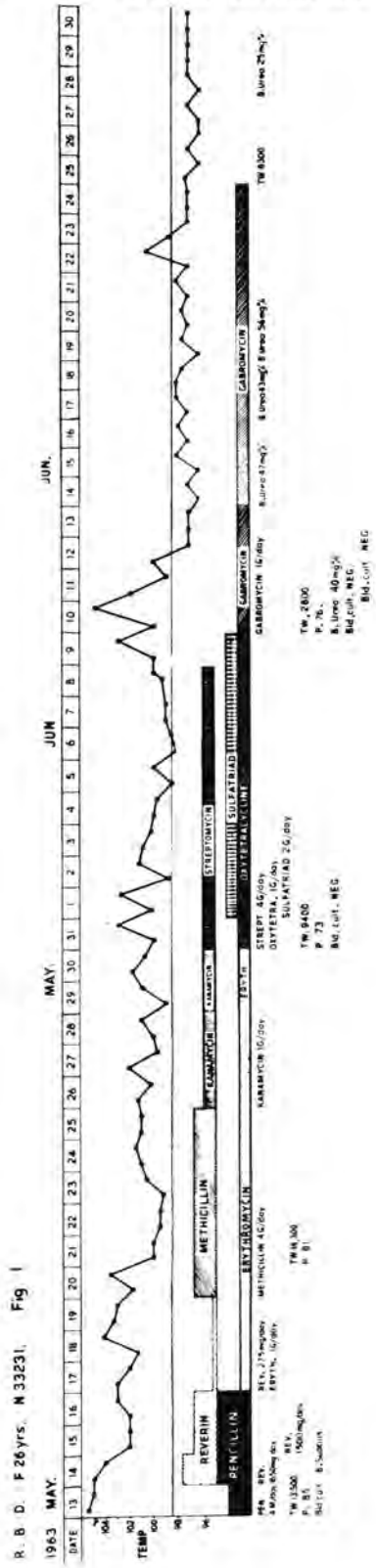
No.	Diagnosis	Other Antibiotics Used	Total Gabromycin	Blood Urea	Comments
1.	Staph. Septicaemia	Penicillin, Streptomycin, Sulphatriad, Pyrrolidinomethyl tetracycline, Oxytetracycline, Erythromycin, Kanamycin.	15G	Increased temporarily. Normal 4 days after course.	Came back 5 months later with staph. brain abscess - died.
2.	Staph. Septicaemia	Tetracycline	13G	Normal	Last seen 8 months later. Well.
3.	Lobar Pneumonia Staph. Septicaemia	Penicillin, Streptomycin, Tetracycline.	6G	Normal	Last seen 5 months later. Well.
4.	Inf. Pilonidal Sinus Staph. Septicaemia	Pyrrolidinomethyl tetracycline.	11G	Top normal (40mg.%) at end of course.	Last seen 2 weeks later. Well.
5.	Septicaemia.	Penicillin, Streptomycin.	15G	Normal	Patient has not attended for follow-up.
6.	Staph. Empyema.	Penicillin, Streptomycin, Chloramphenicol.	7G	Normal	Last seen 5 weeks later. Well.
7.	Pyogenic Arthritis with Septicaemia.	Penicillin, Streptomycin	5.5G	Normal	Just discharged from hosp. Well at discharge.

TABLE I

GABROMYCIN CASES: ANTIBIOTIC SENSITIVITY

	CASE 1		CASE 2	CASE 3	CASE 4	CASE 5	CASE 6	CASE 7
	1st Adm.	2nd Adm.						
Penicillin	-	-	-	+	-		-	
Streptomycin	+	-	-	+	±		+	
Chloramphenicol	±	-	±	+	±		+	
Tetracycline Hyd.	+	-	-	+	-		+	
Oxytetracycline	+	-	-	+	-	No	+	No
Trisulfonamide N.F.	-	-	-	-	-	positive	-	positive
Neomycin	-	-	+	±	+	culture	+	culture
Spiramycin	+	-	+	+	+	obtained	+	obtained
Kanamycin	+	-	±	++	+			
Sigmamycin	+	-	-	++	+		+	
Erythromycin	+	-	+	++	+		+	
DMC tetracycline	+	-	-	++	-		±	
Gabromycin		+++						

TABLE II



of thick yellow pus was obtained deep in temporal lobe near tentorium. The patient had been put on Gabbromycina 0.5G 8 hourly since re-admission. Staphylococcus aureus was grown from the pus, sensitive to Gabbromycina but not to any of the other antibiotics tested. The general condition of the patient remained poor and she died about 2 days after drainage of the brain abscess.

CASE II

Name: N.U.S. Sex: female Age: 31 years Ref: N 34697

Staphylococcal Pneumonia and Septicaemia.

An old case of bronchial asthma and exfoliative dermatitis, the patient was admitted with a history of 7 days scaling and soreness of skin, high fever, cough with yellow sputum and general aches. On examination she was found to be febrile, toxic looking and showed extensive exfoliative dermatitis. However, there was no weeping of skin lesions. Generalized crepitations and rhonchi were heard over lungs.

Staphylococcus aureus was grown from throat swab, sputum and blood cultures. Put on tetracycline 1G/day for 8 days she showed no response and blood cultures came back positive for staphylococcus.

Patient was then changed to Gabbromycina 250 mg. 6 hourly. Fever responded in 48 hours but was not afebrile till 10th day of Gabbromycina. She received 13G Gabbromycina. Patient was also on adrenal corticosteroids for the skin. Blood urea and urine were normal at end of course. Last seen 10 months later when patient was well — except for mild asthma.

CASE III

Name: T.S.H. Sex: male Age: 27 years Ref: N 35466

Staphylococcal Pyodermia, Lobar Pneumonia and Septicaemia. 2 days fever, and left chest pain aggravated by breathing. Signs of consolidation left lower lobe together with pleurisy. Septic spots all over chest.

Developed signs of left pleural effusion after 5 days. Staphylococcus aureus grown

from blood and pus from skin. First put on penicillin 4 mega units, streptomycin 1G and tetracycline 1G/day with no response after 7 days when changed to Gabbromycina 0.5G 8 hourly. Temperature normal after 72 hours. Received total of 6G. Blood urea normal at end of course. Last seen 7 months after course. Remains well.

CASE IV

Name: C.K.F. Sex: male Age: 26 years Ref: N 36036

Staphylococcal Septicaemia from Infected Pilonidal Sinus. 10 days ago developed boil near anus together with fever. 6 days cough with haemoptysis. 3 days chest pain, worse on breathing. Febrile and toxic. Dullness over both lung bases. Infected pilonidal sinus near anus.

Staphylococcus aureus cultured from pus from pilonidal sinus and blood. Was on reverin for 7 days with no improvement, changed over to Gabbromycina. Temperature was normal after 72 hours. Patient received 11G together. Blood urea was 20 mg.% at beginning and 40 mg.% at end of course. 2 weeks later patient was sent to Surgeons for excision of his pilonidal sinus.

CASE V

Name: T.M. Sex: female Age: 43 years Ref: N 37635

Septicaemia, ? Staphylococcal.

4 days fever and joint pains.

High swinging fever. Superficial skin abscesses over elbows, left wrist, right Tendo Achilles.

Tender red nodules over several finger tips.

Cultures taken of blood, nasal swab, sputum, urine were all negative. A high vaginal swab twice grew staphylococcal aureus but there was no local lesion seen.

T.W.: 16,000 P.: 71 E.S.R.: 125 mm./hr.

X - ray chest normal.

She was started on penicillin 4 mega/day; after 2 days streptomycin 2G a day was added. After 48 hours of this combination as temperature was still swinging she was changed over to Gabbromycina. Temperature was normal in 36 hours and the skin abscesses started clearing up. She received total of 15G. Blood urea remained normal throughout the course of Gabbromycina.

Patient last seen 4½ months later. She was well and urine was normal.

CASE VI

Name: G.L.O. Sex: male Age: 13 years Ref: N 37940

Staphylococcal Empyema.

6 days fever and pain right chest, worse on breathing. Signs of effusion right base.

Pleural tap — pus obtained.

Staphylococcal aureus grown from sputum and empyema fluid. Put on penicillin 2 mega and streptomycin ½ gm./day for 10 days with no improvement. Changed to chloramphenicol 1G and streptomycin 1G/day. Improved temporarily, then fever started swinging again.

After 9 days of chloramphenicol and streptomycin, changed to Gabbromycina 0.5G twice a day. Temperature normal after 48 hours. Given total of 7G. Last seen 3 months after Gabbromycina course, was well. Urine examination and blood urea normal at end of course.

CASE VII

Name: T.N. Sex: female Age: 59 years Ref: N 6877

Pyogenic Arthritis with Septicaemia.

Old case of rheumatoid arthritis on adrenal corticosteroid and salicylates. Developed exacerbation of joint pains associated with diarrhoea 2 days.

Swinging temperature. Toxic confusional psychosis. Both knees especially right and right elbow — signs of acute inflammation. T.W.: 13,400. P.: 80%.

Aspiration right knee joint — turbid fluid with pus cells ++. Joint fluid culture: no growth of organisms.

Started on crystalline penicillin 4 mega daily for 3 days when streptomycin 1 gm. daily

was added on because of lack of response. On 6th day changed to Gabbromycina 0.5G 8 hourly. Temperature normal in 24 hours.

Transferred to Orthopaedic Department for further management. Received total of 5.5G Gabbromycina.

At discharge on 20.5.64 patient was well and walking.

Blood urea normal throughout course of Gabbromycina.

Discussion:

Stein (1962) demonstrated in the Bacteriology Laboratory of the General Hospital, Singapore, that Gabbromycina was most effective in vitro tests against 91 strains of Proteus, E. Coli, Intermediate coli-aerogenes, Ps. aeruginosa, Str. faecalis and Staph. aureus organisms. The strains were selected at random from among those showing "considerable resistance to ordinary antibiotics in routine use." While it was effective against 24 strains of staphylococcus aureus tested as compared with 18 strains by neomycin and 20 strains by kanamycin, Gabbromycina was clearly superior at highest levels of inhibition of growth (+++) where 12 strains of staphylococcus were found to be inhibited as against 2 strains by penicillin, 1 by achromycin, 2 by neomycin and 2 by kantrex (kanamycin). On the other hand, of the 24 strains of staphylococcus aureus tested, none was insensitive to Gabbromycina, as compared with the other antibiotics. Thus 22 local strains of the 24 tested were completely insensitive to penicillin, 22 to streptomycin, 11 to chloromycetin, 23 to achromycin, 23 to terramycin, 23 to sulphatriad, 1 to neomycin, 5 to rovamycin and 3 to sigmamycin. Cocchi (1959) observed 96% of 123 strains of staphylococcus pyogeus aureus resistant to tetracycline, oleandomycin, novobiocine, erythromycin, were sensitive to aminosidine at a concentration equal to lower than 8 ug/ml. Daikos et al (1962) showed that almost all of 104 strains of staphylococcus aureus proved sensitive to as low as 2.5 ug/ml., an activity only equalled by kanamycin.

In our clinical studies, the use of Gabbromycina was restricted to those cases showing no response to the other antibiotics and the results have been gratifying. It is noteworthy that the response was fairly prompt in all cases, lysis of fever occurring within 48 to 72 hours.

All the 7 cases had a swift response to Gabbromycina after the other antibiotics had failed. Only Case I had a relapse of staphylococcal infection 5 months later. In this case a large brain abscess was found in the temporal lobe. It is very probable that the earlier course of treatment had sealed in the abscess but failure to drain the abscess in the first instance had allowed it to extend. It is interesting to note the various foci of infection in the series of cases — skin, brain, lung, pilonidal sinus, pleural cavity, joints.

Conclusion:

With the availability of Gabbromycina the physician now has a powerful antibiotic which is effective in various forms of resistant staphylococcal infection. Provided that some precaution is taken in the cases with known renal disease, no side-effects have been noticed in the present small series except transient proteinuria in one case and transient rise in blood urea in another.

REFERENCES:

1. Arcamone F., Bertazzoli C., Ghione M., Scotti T. (1959). Aminosidina: un nuovo antibiotico oligosaccaridico. 7.251.
2. Canevazzi G., Scotti T. (1959). Descrizione di uno streptomicete (Streptomyces chrestomyceticus) SP. nova produttore del nuovo antibiotico amminosidina. Giorn Microbiol., 7, 242.
3. Cocchi P. (1959). Attivita "in vitro" del 1600 F.I. su 123 ceppi di stafilococco piogene resistenti a vari antibiotici. Riv. Clin. Pediat., 64, 257.
4. Daikos G. K., Kourkoumeli P., Paradelis A. (1962). Aminosidine, a new oligosaccharide antibiotics: bacteriologic and pharmacologic observations. Antibiot. & Chemother., 12, 243.
5. Finland M. (1958). Proceedings of 6th Annual Symposium on Antibiotics. Antibiotics Annual 1958 – 1959 Medical Encyl., New York, N.Y. p. 1091.
6. Knight V. (1958). Ibid p. 1076.
7. Rountree P. M. (1958). Proceedings of the 6th Annual Symposium on Antibiotics. Antibiotics Annual 1958 – 1959. Medical Encyl. New York, N.Y. p. 1081.
8. Shaffer T. E. (1958). Ibid p. 1078.
9. Stein, J. (1962). A Note on the new antibiotic "Gabbromycina" (Aminosidine Sulphate). Singapore Med. Journ. 3, 193 – 195.

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"PERSONALITY EVALUATION AS A PART OF MEDICAL HISTORY"

(Analysis of the Cornell Medical Index forms of 213 psychologically distressed students)

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"IT IS QUITE IMPORTANT TO KNOW WHAT SORT OF MAN HAS THE DISEASE AS TO KNOW WHAT SORT OF DISEASE THE MAN HAS" — SIR WILLIAM OSLER.

A certain section of Asian medical men with previous medical training largely orientated to somatic field of medicine are inclined to hold the view that psychological ill health hardly exists in this part of the world; as if it were a bye product of western culture and civilisation. On the other hand some clinicians who inspite of recognising the fact that psychological ill health does pose a problem, feel that in terms of priorities it should be viewed as a science of to-morrow, in this country. In any case, most of the experienced clinicians will no doubt subscribe to the view that mental ill health is as much a problem in the east as in any western country.

Significance of Minor Psychiatric Illness:—

In any developing society, anxiety resulting from psychic conflicts and daily stresses and strains of life is inevitable, and perhaps necessary, for it acts as a spur to progress in life. But severe degrees of anxiety and prolonged psychological stresses tend to produce adverse effects on individuals and are likely to produce symptoms which lead to impaired efficiency in work. It is well-known that anxiety states manifest as physiological symtoms and are responsible for frequent absences from work. In almost every discipline of clinical medicine there could be no dearth of case histories where-in patients complained of a variety of bodily symptoms in the absence of physical manifestations and positive laboratory or radiological findings. Thus, though minor psychiatric illness may be of little consequence from the point of view of general mortality, as is the case with diseases such as tuberculosis, cardiac conditions, tropical disorders and cancer; it is of grave significance to the individual, the community and the country's economy. From a physician's point of view also it poses a significant problem because it takes up a great proportion of his valuable time and also because it is often very difficult to manage.

Despite all the firmness one may be capable of displaying, one has to face the question of medical certification in such cases very often. Since the society in general and the employers in particular view sickness certificates issued in the absence of obvious physical disability with doubt and distrust, every medical man finds himself in a quandary from time to time as to what course he should adopt in regard to medical certification of such cases, so that he does not compromise his medical standing and fair name, and at the same time acts in the best interests of his patient.

Prevalence of Minor Psychiatric Illness:—

Gross psychotic conditions, diseases of old age, and mental deficiency are generally not so difficult to recognise, provided they are not masked by physical ailments. But minor psychiatric illness although common in general practice, is not only difficult at times to recognise, but also difficult to define and classify. In this group are included an array of disabling psychological abnormalities, such as various types of psychoneuroses and conditions which present as vague symptoms for which no good cause can be found and are termed as functional disorders.

According to the report of the working party of the Council of the British College of General Practitioners entitled" Psychological Medicine in General Practice" (1958), the accepted figure of mental ill health in the United Kingdom was in the region of 30.0 per cent. In the United States, as far back as in 1932, McLean reported that 27 out of 100 consecutive patients admitted to the medical services

of the University of Chicago out-patient clinic were found to be neurotics, 23 had questionable organic illness, and only 50 had clear cut organic disease.

Neurotic illness of all types is said to be responsible for half a million people absenting themselves from work at any one time in Great Britain (Sanders M.S., 1963). It was observed by T. A. Lloyd Davies (1959) that adolescents employed in industrial establishments in the United Kingdom suffered from the highest sickness absence rate of any age group except that of men just before retirement. In his opinion, the high sickness absence rate in adolescence was an index of social health and was due to difficulty in emotional and mental adjustment to work. Multiple absences, usually of short duration due to sickness are generally indicative of psychological maladjustment or irresponsibility (Lloyd Davies T.A., 1959). A similar situation exists even in the teaching profession, for the results of survey of teachers' health records in the Los Angeles City Schools over a ten year period from 1942-43 to 1953-54 showed that nervous and mental disorders constituted the greatest single cause of teacher absence from work.

Rate of sickness absence encountered in the University students is relatively low when compared with that seen in the youth of similar age group employed in the University, civil service, commercial firms, and industries. Nevertheless, it seems to pose a problem to teachers, parents and the administration who expect the University students to be the healthiest lot in the community. To them absence from classes or practicals unless produced by major physical illness or surgical operation is difficult to comprehend and therefore not easily acceptable. From their point of view, it is not easy to see why University students should have even emotional problems, for student days are considered to be the happiest and most carefree times of life.

University students in this country with considerable prospects of employment opportunities after graduation, and with greater attachment and responsibilities to their families are less likely to absent from classes and practicals as malingerers. There is no doubt that the sickness absence in this University's student population is mainly due to infections, surgical operations and other somatic conditions. Nevertheless, a certain proportion of sickness absence could only be explained on grounds of minor psychiatric or functional disorders. In majority of such cases, since the psychological conflicts producing the illness are covert, the subjects have no insight into their difficulties. But even when individuals are aware that their symptoms may not be connected with any underlying diseases they do not easily admit of psychological problems or situational stresses immediately facing them. This attitude could perhaps be attributed to certain degree of stigma attached to any form of psychological illness. In this country as anywhere else, people are resistant to admit to psychological difficulties, because of the fear that causation of symptoms outside the somatic field may be construed by others as a slur on their stolid social and mental background.

Importance of Medical Inventories and Their Limitations:—

Many physicians believe that their primary function is to diagnose and treat manifest disease. One does not often need a comprehensive history or an exhaustive physical examination in order to treat obvious disease. However, according to Forkner (1962), the more astute physician realises that his primary task is to find hidden disease and to treat it before obvious signs and symptoms have betrayed the irreversible nature of disease process, and before the health of the individual is undermined. In other words, in case of any disease process case finding and early treatment are the key to eventual eradication of the disease. Although early diagnosis of a psychologically disturbed person may be a very difficult exercise, it is no exception to this rule. In this respect the sooner an individual who is experiencing emotional or adjustment difficulties is offered help the less severe the disability is likely to be (Farnsworth Dana, 1962).

During the early part of this century, properly recorded and analysed medical histories, and carefully observed clinical findings were the mainstay of good medical practice. But with the passage of time and the rapid advancement in various fields of medical and

para-medical sciences with consequent development of better insight into the aetiology, pathology and treatment of what were previously confounding medical problems, increasingly greater reliance has come to be placed on laboratory and other diagnostic procedures. Nonetheless, the importance of elicitation of thorough and accurate medical history remains unmitigated, and no instrument or procedure alone has ever been credited to supplant clinical judgement.

Majority components of psychosomatic and psychic disorders involve personality factors, such as thought, behaviour, attitude and mood. Therefore, whatever may be the nature of medical practice a physician is engaged in, it is imperative that he be familiar with the methods of assessing disturbances of the mind. Just as all physicians have to rely on the laboratory, they ought to rely on and be well versed with certain diagnostic tests carried out by clinical psychologists.

Some consider self-administered inventories followed by medical interview to be a better method for obtaining medical history, irrespective of whether a patient suffers from a purely somatic or psychosomatic illness. They are also time-saving and useful sources of personality data. Administration of these inventories involves asking patients to read recorded questions pertaining to every aspect of health and to circle with pen or pencil either "Yes" or "No" to after each question.

Application of medical inventories are beset with certain difficulties. At times the patient is unable to grasp the implication of the question asked. There are also the problems of prejudice, and malingering. Another pitfall at least in so far as pure psychological inventories are concerned, is that personality traits themselves are to a certain extent changeable from time to time. But just as laboratory tests without proper medical history and clinical examination are of little value in the establishment of correct diagnosis, the medical questionaires without customary interview and clinical assessment would not serve the desired purpose. They are intended to be used as a spring-board for subsequent interview. The interviewer simply examines the subject's answers with a view to identifying problems and for further probing during the interview.

In any study relating to pure psychological responses of human beings importance of cultural factors cannot be overlooked. It is well-known that patterns of behaviour and attitude are to a large extent determined by social traditions, national cultures and previous educational experiences. Therefore, psychological tests designed for application to persons belonging to one cultural or sub-cultural group when applied to individuals belonging to different cultural or sub-cultural groups may fall short in their validity and are liable to come under certain scientific criticism. From a clinical psychiatrist's point of view, individuals of Malay, Chinese, Indian and Ceylonese origin born and brought up in the Malaysian environment are expected to register different responses to questionaires devised in the United States. This objection, however, is not wholly valid at least in so far as the University going population of this country is concerned. A substantial majority of our University students besides experiencing inter-racial or cross cultural influences between themselves have also to a varying extent but constantly been exposed to the Euro-American ways of life. This could be explained on the basis of close historical and political association in the past with the western countries, use of mass media in dissemination of information, and our country's educational policies which have to a large extent been patterned on the British educational system.

With regard to validity in the same culture, as such, all personality tests, numbering approximately eight hundred are open to question. This is because even the longest one, the Minnesota Multi Phasic inventory which includes more than five hundred questions barely begins to scratch the surface of a total of some 18,000 human personality traits one can find listed in any book of psychology.

The Cornell Medical Index:—

No existing medical inventory designed in the west could be considered to be entirely free from cultural references. However, in the author's view, out of all the tests, the Cornell Medical Index is the most suitable for application in Malaysia, because it is almost free from cultural influences. Valid

somatic and personality appraisals are often possible with the use of Cornell Medical Index alone. And if it is followed by a thorough long interview consisting of family, social and personal history, its value in the field of specific diagnosis is considerably enhanced. In the U.S.A., the Cornell Medical Index has been found to be of use in private medical practice, in hospitals, in teaching, in industry, in army, in research and in the Universities (Brodman K. et al, 1949).

The Cornell Medical Index consists of 195 questions corresponding closely to those usually asked in a detailed and comprehensive medical interview including many of the psychological aspects of the patient's disorder. Questions are in informal language and worded in such a way that they can be understood by persons with a reading knowledge of simple English (Brodman K. et al, 1949). These questions are also available in Chinese, French and Spainish. In the U.S.A. the Mandarin version of the Cornell Medical Index has been found to be helpful in obtaining medical history from the resident Chinese patients who may not be very fluent in English. It usually takes about twenty minutes to complete the entire questionaire. Questions are of four kinds: those relating to bodily symptoms, those relating to past illnesses, those relating to family history, and those relating to thought, behaviour, mood, and feeling. The questions are arranged in sections headed by letters of the alphabet, those in each section being related. (McDowell F. and Wolff H.G., 1960). A list of these sections, together with the number of questions in each, is given in Table 1. Of the total 195 questions included in the inventory 51 relate to such psychic aspects of health, as inadequacy, depression, anxiety, sensitivity, anger and tension.

There are no set rules on how to interpret the answers which are dependent on a physician's knowledge and experience. But McDowell and Wolff (1960) are of the opinion that generally speaking more than two or three "Yes" answers to any of the fifty-one questions relating to patient's moods, feelings, attitudes and behaviour are suggestive of significant psychological disturbance. The fact that many emotionally disturbed persons tend to either give equivocal response to some questions by omitting to answer "Yes" or "No," or write remarks, should also be taken into account while interpreting the results.

Present Study:—

The Cornell Medical Index has been in use in the student health practice of this University as an adjunct to routine medical history for past two years. It has been found that questions pertaining to emotional aspects of patients' life do serve a useful purpose of personality evaluation provided the inventory is followed up by a medical interview during which more personal, family and social history is elaborated.

The original purpose of the inquiry was to survey the incidence of minor psychiatric illness in the student population of this University. This was to be achieved by applying psychological screening to every student as a routine. However, after the procedure was introduced some difficulties were encountered. Some students felt that they were asked too many personal questions which was construed as tantamount to meddling in their private affairs. A few of them tended to give false answers deliberately; whereas a few initially indicated greater psychic distress on an official form than during subsequent face to face interview. Consequently the object of surveying the actual incidence of mental ill health among students had to be temporarily shelved. Instead it was decided to confine our investigations to those who opted to seek advice for emotional problems and were willing to volunteer precise detailed histories and to those who came to consult for physical symptoms in functional disorders.

In the present study, responses registered by the psychologically distressed students only, numbering 213 seen during the year 1963 are analysed. Positive answers to all questions pertaining to psychic aspects of medical history including fatigability and difficulty of concentration in academic work given by all the 213 subjects are recorded in Table 2. And since the negative answers are of no significance all answers in "No" have been excluded. Titles of various groups of questions, such as inadequacy, depression, anxiety, sensitivity, irritability, tension, etc., were not printed in

the original inventories, but are reproduced here for the benefit of the reader only.

It is obvious that of the 213 students suffering from minor psychiatric illness reviewed here, the highest number of 142 or 66.67 per cent gave positive replies to the question "Are your feelings easily hurt?" signifying that such persons are usually very sensitive temperamentally. That such a group has feelings of inadequacy and experiences great difficulty in making up its mind is evident from "Yes" answers given by 114 or 53.52 per cent to the query "Is it always hard for you to make up your mind?" In connection with queries on depression 42.25 per cent usually felt unhappy and depressed and 11.27 per cent expressed varying degrees of suicidal tendencies. Although none of the 213 subjects was ever admitted to a mental hospital, 9 gave a previous history of nervous breakdown and 15 admitted to nervous breakdown in their families. A pattern of marked anxiety was shown by 41 per cent and that of easy irritability by 53 per cent. One hundred and twenty three or 57.75 per cent of all the disturbed person complained of difficulty of concentration in studies, whereas 113 or approximately 53 per cent indicated that they were unnecessarily worried about examinations although no examinations were approaching when the questions were put to them. That fatigability is usually associated with functional disorders is reflected in the 45.54 per cent affirmative answers to the question "Do you often get spells of complete exhaustion or fatigue?" It may be of interest to note that at least 7 per cent of the students falling in this category were used to smoking at least 20 cigarettes daily.

At the beginning of the 1964-65 session, the whole position in regard to including mental screening with routine physical examination was reviewed. Because it was felt that despite certain limitations encountered in previous years it was worthwhile applying the procedure to all freshmen in order to determine the rate of prevalence of psychic distress among the student population. Hence the practice of asking the freshmen to fill up the modified Cornell Medical Index including all the questions pertaining to behaviour and mood was resumed at the commencement of the current academic session. Response from the students to this has so far been very satisfactory, and no one has objected or refused to complete the forms. It was also decided to conclude the inventory by asking the question "Are there any personal or emotional problems you wish to discuss privately and confidentially?" The insertion of this final query was intended to find out the proportion of students who were willing to admit the existence of psychic disturbance and were also prepared to seek alleviation of symptoms through medical counselling. This could also serve the purpose of planning the future expansion of medical guidance and counselling facilities in this University.

Of the first one hundred and eighty fresh entrants who have already passed through this screening programme since the beginning of the current academic year, 32 exhibited varying degrees of psychic distress of whom twenty two replied that they wished to discuss their problems further thereby indicating that they needed medical help at least in the form of medical counselling.

Summary

1. Minor psychiatric illness is of great importance to the individual because of the personal disability it produces. However, because of impaired efficiency in work it leads to, and frequent absences from the job it gives rise to, it is of grave significance to the community at large. From a physician's point of view it also poses a problem in that it takes a great proportion of his valuable time and is often very difficult to treat.

2. Exact incidence of minor psychiatric illness in this country is not known, nor is it known to what extent it might have in the past affected adversely the economy of this country. But figures quoted here from the United Kingdom and the United States where surveys have been conducted leave us in no doubt that substantial segments of the general population in the two countries are afflicted with this disability.

3. Despite rapid advances in every branch of medical science, no laboratory method or

any other procedure so far known to us can replace a good medical history, clinical examination and clinical judgement. Nevertheless like any other ancillary diagnostic test, psychometry even in its elementary form has a place as a supplement to diagnostic evaluation, especially in the field of psychosomatic and psychic health. There is no doubt that it is quite helpful in probing intangible personality problems of patients.

4. The Cornell Medical Index originally designed at the Cornell University is a valuable and time-saving personality probing adjunct to any medical case history recording. Questions relating to human behaviour, mood and thought contained in the inventory may not be as numerous as we would like to have, nevertheless the index does serve a very useful purpose; and provided it is followed up by a personal face to face interview, it is of great assistance in the detection of early disease.

5. Analysis of the affirmative answers relating to behaviour and mood patterns of 213 psychologically disturbed students seen in the student health practice of this University over a period of one academic year is given here. This is to show the reader what can be achieved through the application of the Cornell Medical Index particularly when a physician is dealing with an ailment with no somatic basis.

6. Of the first one hundred and eighty freshmen who have already been subjected to routine medical history and clinical examination in 1964, twenty two expressed the desire to obtain further guidance and counselling.

TABLE 1

The Sections on the Cornell Medical

INDEX

Section	Questions Referring to	Numbers of Questions
A	Eyes and ears	9
B	Respiratory system	18
C	Cardio vascular system	13
D	Digestive tract	23
E	Musculo skeletal system	8
F	Skin	7
G	Nervous system	18
H	Genito-urinary system	11
I	Fatigability	7
J	Frequency of illness	9
K	Miscellaneous diseases	15
L	Habits	6
	MOOD AND FEELING PATTERNS	
M	Inadequacy	12
N	Depression	6
O	Anxiety	9
P	Sensitivity	6
Q	Anger	9
R	Tension	9
	Total:	195

TABLE 2

Tabulation of Individual Positive Responses
(Total Number of Forms — 213)

Question	Total Number of "Yes" Answer	Percentage of "Yes" Answer
Inadequacy		
1. Do you sweat or tremble a lot during examinations or questioning?	74	34.73
2. Do you get nervous and shaky when approached by a superior?	94	44.13
3. Does your work fall to pieces when the boss or a superior is watching you?	75	35.21
4. Does your thinking get completely mixed up when you have to do things quickly?	98	46.00
5. Must you do things very slowly in order to do them without mistakes?	102	47.88
6. Do you always get directions and orders wrong?	15	7.041
7. Do strange people or places make you afraid?	38	17.84
8. Are you scared to be alone when there are no friends near you?	33	15.49
9. Is it always hard for you to make up your mind?	114	53.52
10. Do you wish you always had someone at your side to advise you?	109	51.17
11. Are you considered a clumsy person?	24	11.27
12. Does it bother you to eat anywhere except in your own home?	32	15.02
Depression		
13. Do you feel alone and sad at a party?	51	23.94
14. Do you usually feel unhappy and depressed?	90	42.25
15. Do you often cry?	15	7.041
16. Are you always miserable and blue?	48	22.54
17. Does life look entirely hopeless?	24	11.27
18. Do you often wish you were dead and away from it all?	24	11.27
Anxiety		
19. Does worrying continually get you down?	87	40.84
20. Does worrying run in your family?	72	33.80
21. Does every little things get on your nerves and wear you out?	44	20.65
22. Are you considered a nervous person?	70	32.86
23. Does nervousness run in your family?	23	10.80
24. Did you ever have a nervous breakdown?	9	4.225

Tabulation of Individual Positive Responses — (Continued)

Question	Total Number of "Yes" Answer	Percentage of "Yes" Answer
25. Did anyone in your family ever have a nervous breakdown?	15	7.041
26. Were you ever a patient in a mental hospital (for your nerves)?	0	0
27. Was anyone in your family ever a patient in a mental hospital (for their nerves)?	10	4.694
Sensitivity		
28. Are you extremely shy or sensitive?	93	43.66
29. Do you come from a shy or sensitive family?	32	15.02
30. Are your feelings easily hurt?	142	66.67
31. Does criticism always upset you?	117	54.93
32. Are you considered a touchy person?	73	34.27
33. Do people usually misunderstand you?	74	34.73
Irritability		
34. Do you have to be on your guard even with friends?	51	23.94
35. Do you always do things on sudden impulse?	104	48.82
36. Are you easily upset or irritated?	113	53.04
37. Do you go to pieces if you don't constantly control yourself?	70	32.86
38. Do little annoyances get on your nerves and make you angry?	100	46.94
39. Does it make you angry to have anyone tell you what to do?	91	42.72
40. Do people often annoy and irritate you?	42	19.72
41. Do you flare up in anger if you can't have what you want right away?	46	21.60
42. Do you often get into a violent rage?	22	10.33
Tension		
43. Do you often shake or tremble?	27	12.68
44. Are you constantly keyed up and jittery?	30	14.08
45. Do sudden noises make you jump or shake badly?	52	24.41
46. Do you tremble or feel weak whenever someone shouts at you?	35	16.43
47. Do you become scared at sudden movements or noises at night?	87	40.84
48. Are you often awakened out of your sleep by frightening dreams?	33	15.49
49. Do frightening thoughts keep coming back in your mind?	49	23.00

Tabulation of Individual Positive Responses — (Continued)

Question	Total Number of "Yes" Answer	Percentage of "Yes" Answer
50. Do you often become suddenly scared for no good reason?	33	15.49
51. Do you often break out in a cold sweat?	17	7.980
Study Difficulties		
52. Do you get unnecessarily worried about examinations?	113	53.06
53. Do you tend always to worry over small things?	125	58.68
54. Do you find that your mind tends to wander badly, so that you lose track of what you are doing?	123	57.75
55. Are you troubled by feelings of intellectual inferiority?	88	41.31
Neurotic Traits		
56. Do you bite your nails badly?	18	8.450
57. Are you troubled by stuttering or stammering?	26	12.21
58. Are you a sleep walker?	5	2.347
59. Were you a bed wetter between the ages of 8 and 14?	31	14.55
Fatigability		
60. Do you often get spells of complete exhaustion or fatigue?	97	45.54
61. Does working tire you out completely?	78	36.62
62. Do you usually get up tired and exhausted in the morning?	74	34.73
63. Does every little effort wear you out?	30	14.08
64. Does nervous exhaustion run in your family?	15	7.041
Habits		
65. Do you find it impossible to take a regular rest period each day?	70	32.86
66. Do you find it impossible to take regular daily exercise?	101	47.42
67. Do you smoke more than 20 cigarettes a day?	15	7.041

ACKNOWLEDGEMENT

I would like to express my thanks to Mr. Foo Choo Keng and Miss Cheng Guek Liang for their assistance in preparing the transcript of this article.

REFERENCES

Brodman Keeve et al (1949). The Cornell Medical Index, Journal American Medical Association; Vol. 140, No. 6.

"Evaluation Studies in Health Education and Health Services" 7th in a series (1954). Teachers' Health. The Health Education and Health Services Branch, Auxilliary Services Division, Los Angeles City School Districts.

Farnsworth D. L. (1962). Concepts of Educational Psychiatry. Journal American Medical Association, Vol. 181,10.

Forkner Claude E. (1962). Special Methods of Recording the History and Physical Examination. Medical Clinics of North America, 615 - 626.

Lloyd Davies T. A. (1959). The Young Worker. Industrial Medicine and Hygiene, Vol. 1, 252.

McDowell Fletcher and Wolff Harold (1960). Handbook of Neurological Diagnostic Methods; Publisher. The Williams & Wilkins Co., Baltimore.

McLean E. A. (1932). Psychiatry and General Medicine. Mental Hygiene, Vol. 16, 577.

"Psychological Medicine in General Practice" (1958). British Medical Journal, Vol. 2, 585.

Sanders M. S. (1963). The Neuroses in General Practice. The Practitioner, Vol. 190, 1138.

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THIRTY-THREE CASES OF ACUTE ARTHRITIS IN SABAH

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Introduction

Acute arthritis is a common world-wide diagnostic problem. The treatment depends to such an extent on the cause that it is vital to reach an accurate diagnosis.

Gout may be a fatal disease due to its involving the kidneys but there is reason to believe that early diagnosis and adequate treatment can prevent the development of chronic arthritis, tophi and renal damage. Unfortunately both early diagnosis and adequate management are extremely difficult here for social and geographical reasons.

Since acute arthritis is common in this area it was thought worthwhile to gather the cases together in order to find the more common causes.

Method

It was found to be impossible to obtain really accurate histories from most of these patients despite repeated attempts. This has made data on family histories valueless and the duration of joint symptoms is only accurate to the nearest year or two.

A complete physical examination was made and recorded at the time for the purpose of this survey. Only the few relevant facts are included in the tables.

Investigations on all patients included haemoglobin estimation, white blood cell total and differential counts, examination of the urine for protein, sugar, cells and casts, serum uric acid, blood urea and chest Xray. Most patients had Rose Waaler and Latex agglutination tests. Many patients also had Xrays of affected joints and Anti-Streptolysin O titres done.

Most of the Rose Waaler and Latex agglutination tests and many serum uric acid estimations were carried out by the Department of Pathology, Singapore. Many were done in the hospital laboratory here.

Serum uric acid was estimated by the method of BROWN (J.Biol.Chem.1945,158, 601.) using phosphotungstic acid as a reagent. The Singapore department of Pathology takes 5.0mg./100ml. to be the upper limit of normal in all people. For this series the upper limit of normal was taken to be 5.5mg./100ml. for males and postmenopausal females.

Materials

In the eleven months June 1963 to April 1964 inclusive, thirty-three adults have been admitted to the Queen Elizabeth Hospital, Jesselton suffering with acute arthritis either for the first time or giving a history of previous attacks. These all had subjective and objective evidence of arthritis. They were over sixteen years and none had a purely chronic arthritis or only the arthralgias which accompany many fevers. Expatriates are not included.

The Hospital serves a population of about 120,000 people scattered over an area of about 3,400 square miles. About 70% of the population is indigenous — Kadazans and Bajaus. 25% is Chinese and 5% is composed of Malays, Indians, Phillipinos, Indonesians, Timorese and others.

It is certain that many people with acute arthritis have been missed from this series for many reasons. The chief of these are that many will have found it difficult to reach hospital quickly, many will have accepted local remedies, some will have attended government dispensaries or private practitioners and some may have come with a mild attack and been given outpatient treatment.

Results

Twenty-two of the thirty-three cases were suffering from an acute attack of gouty arthritis. Five of these had tophi and in thirteen the first metatarsophalangeal joint was or had been previously affected.

TABLE

CASES OF GOUT

No.	Race	Age of Onset	Age of Presentation	Presenting Joints	Other Joints Involved	Serum Uric Acid	Rose Waaler	Latex	Other Details
1	Ch	65	80	Ankles	Knees, Big Toes	10.4	1/40	—	Proteinuria BP 190/100
2	Ch	50	56	Big Toe	Ankles Knees Metacarpo Phal. J.	7.5	—	—	Presented with execerbation and acute Polio.
3	Ch	36	40	Ankle	Knees, Wrists	8.3	1/10	+	Ureteric Colic
4	KAD	35	38	Knee	Wrists Knee, Ankles	8.5	—	—	—
5	KAD	40	43	Knee	Wrists, Big Toes	7.0	1/10	—	Tophi both ears
6	SINO KAD	30	34	Ankle	Big Toes, Knees	10.7	1/80	—	Ureteric Colic Large Renal Calculus
7	INDON	56	68	Ankles	Big Toes	8.4	—	—	Tophi both ears Proteinuria BP 160/105
8	KAD	24	27	Big Toe	Ankles, Elbows	7.0	—	—	—
9	Ch	51	60	Ankle	Big Toes, Wrists	9.0	1/20	—	Tophaceous Olecranon Bursae
10	Ch	60	65	Ankles Knees	Big Toes	7.4	1/10	—	Tophi in ears and toes Proteinuria
11	KAD	55	55	Big Toe	Knees Ankles	11.6	—	—	—
12	KAD	37	38	Big Toe	—	6.1	—	—	—
13	KAD	35	40	Knees	Ankles, Big Toes	6.8	1/20	—	Tophaceous Olecranon Bursae
14	KAD	49	55	Knee	Elbow Ankles Shoulders	12.5	1/160	—	—
15	BAJAU	55	56	Big Toe	Knees	8.6	—	—	Proteinuria
16	Ch	56	60	Big Toe	Ankle	11.3	1/40	—	—
17	BAJAU	46	52	Ankles	Nnee	6.6	1/80	—	—
18	KAD	43	43	Ankles	—	11.9	—	—	On Diuretics Proteinuria BP 200/110
19	KAD	43	46	Ankle	Wrists, Knees	7.4	1/40	—	
20	KAD	40	40	Wrist	—	6.0	—	—	Proteinuria

TABLE

CASES OF GOUT

No.	Race	Age of Onset	Age of Presentation	Presenting Joints	Other Joints Involved	Serum Uric Acid	Rose Waaler	Latex	Other Details
21	KAD	62	77	Ankles	Knees	10.2	—	—	Duodenal Ulcer Proteinuria with Pus cells + +
22	KAD	38	50	Wrist	Elbow, Knees	7.4	1/20	+	—
	RHEUMATOID ARTHRITIS								
23	KAD	46	53	Knee	—	3.6	1/320	+	Differential Agglutination Titre 1/160
	OSTEO ARTHRITIS								
24	Ch	48	56	Knees	Heberden's Nodes Ankles	3.7	—	—	—
25	KAD	44	51	Knees	—	4.0	—	—	Proteinuria Typical X-ray changes
26	Ch	53	58	Knees	Heberden's Nodes	2.7	—	—	Proteinuria
	ANAPHYLACTOID PURPURA OF SCHONLEIN								
27	Ch	20	20	Ankles Knees	—	2.7	—	—	Petechiae on Limbs and Buttocks
28	Ch	62	62	Shoulders Elbows Wrists	Knees	3.0	—	—	Histological Proof Petechiae Limbs.
	PETER'S SYNDROME								
29	Ch	28	28	Knees Elbows	—	3.2	—	—	Both had GCFT— No Rash VDRL—
30	PHILIP.	46	46	Ankles Knees	—	4.9	1/80	+	Red Eyes Urethral Discharge
	UNDIAGNOSED								
31	INDIAN	23	23	Knees Ankles	—	5.2	1/10	—	ASOT 180 TODD Unit Bronchiectasis with Pneumonia
32	KAD	37	38	Prox Inter Phal. Joint	Shoulder Knee	3.4	—	—	
33	TIMORESE	24	24	Ankle	—	4.8	1/20	+	

All cases were male except 15, 16 and 24.

The blood urea was not more than 35mg./100ml. in any patient.

Serum uric acid levels were repeated after three months in only four cases:—

Case 2 the level fell from 7.5 to 3.6mg./100ml.

case 3 the level rose from 8.3 to 9.8mg./100ml.

case 5 the level fell from 7.0 to 3.3mg./100ml.

case 6 the level fell from 10.7 to 2.2mg./100ml.

Most of the cases of gout were rubber tappers or padi farmers but some were from higher social grades.

There were no geographical areas with an unexpectedly high incidence of arthritis.

Treatment

Cases of gout were treated initially with colchicine or phenylbutazone orally until the acute attack had largely subsided. At the same time probenecid 0.5G. b.d. with Soda Bicarbonate 2G.q.d.s. was started. This was increased to probenecid 1.0.G. b.d. after four days and continued for at least three months. It was hoped to obtain treated serum uric acid levels after three months in all cases but most were not available at the time. A urinary output of at least 2,500ml. daily was insisted on while in hospital.

Case 1 was treated only with aspirin, in view of his age and the severe degree of chronic deformity, for its analgesic and anti-inflammatory effect rather than for its uricosuric power.

No blood dyscrazia or dyspepsia was encountered with probenecid but the soda bicarbonate had to be reduced at times because of nausea.

All other types of arthritis were treated with aspirin 600mg. four hourly in the first instance. Case 30 needed phenylbutazone and a ten day course of cortisone before obtaining relief.

Discussion

"Gout is almost unknown in the Orient and Tropics." Cecil and Loeb. A textbook of Medicine. 10th.Edition.p595.

This series is not sufficiently comprehensive to estimate the incidence of gout in this district but it does show that it is a common cause of severe acute arthritis.

Unfortunately owing to lack of facilities here a comparison between other similar series and this cannot be made.

The diet here consists chiefly of rice, dried fish, fruit and a little meat. It is now believed that the inherited predisposition to gout or hyperuricaemia is the cause of gout and that certain foodstuffs have the ability only to trigger off an attack. For this reason a detailed examination was not made of the diet of these patients. One single alcoholic drink cannot be blamed as several sufferers come from kampongs where beliefs prohibit alcohol.

There was no evidence of any other cause for the high serum uric acid levels such as hypothyroidism, renal failiure, starvation or severe infectious disease with much tissue breakdown. Case 18 had been treated with guanethidine 30mg. and hydroflumethiazide 50mg. daily for three months before his first attack. He also had generalised psoriasis of six months duration. The only affected joints were his two ankles. The distal interphalangeal joints of his fingers and toes were normal.

The only case with an obvious precipitating factor was 2. This attack started with the fever of the minor illness of acute paralytic polio in the opposite leg.

In patients with gout the commonest cause of death associated with the disease is renal involvement. Gouty nephritis may cause hypertension, renal failiure or predispose to chronic pyelonephritis with or without stone formation. In this series 6 out of 22 gouty subjects had proteinuria, two have recently suffered from ureteric colic and one also has a large renal calculus. 3 had a blood pressure over 95mm.hg. diastolic.

Only one of the patients in this series had been diagnosed as acute gout in a previous attack.

Rheumatoid arthritis is uncommon here when compared with the incidence in temperate climes.

Osteoarthritis is probably as common here as it is in the rest of the world but seldom has severe enough exacerbations to need hospital admission.

Only three cases did not fit a well recognised diagnosis. None of these had any residual deformity or pain after the acute attack had subsided.

Summary

In an eleven month period thirty-three adults were admitted to the Queen Elizabeth Hospital, Jesselton suffering with acute arthritis. Investigations showed that twenty two were suffering from acute gout, three had exacerbations of osteoarthritis, two had Reiter's syndrome, two had anaphylactoid purpura with arthritis of Schonlein and three remain undiagnosed.

The incidence of gout is surprisingly high in this series. This is of importance as the treatment of gout is specific and quite different from that of the other disease mentioned.

I am grateful to colleagues for referring cases to me. My thanks are due to Dr. J. A. B. Nicholson, Acting Director of Medical Services, Sabah for permission to publish.

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LABORATORY MEETING

held under the auspices of the ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE on January 10, 1964 at the INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR

DR. J. W. FIELD
(Malacca Agricultural Medical Board),

DR. A. A. SANDOSHAM and MR. YAP LOY FONG
(Division of Malaria and Filariasis IMR, Kuala Lumpur)

A simplified rapid method of Romanowsky staining for thin blood films

The method has been briefly described in the *Trans. R. Soc. trop. Med. Hyg.*, 1963, *57* (6), 487. Fix the thin film with 10 drops of 0.2% eosin Y in methanol (Analar), then immediately add 20 drops of Field's Stain 'A' (with the addition of two drops of 40% w/v cetrimide B.P. ('Cetavlon' Concentrate, I.C.I.) to 60 ml of stain in dropping bottle), *agitate* to mix and stain for 2 seconds to 5 minutes according to preference: *flush* off the stain for 2 seconds with water, and place the slide on end to drain and dry.

The demonstration slides showed thin blood films with *Plasmodium cynomolgi bastianellii* stained for 2 seconds, 30 seconds, and 3 minutes, respectively. The nuclear chromatin and cytoplasm of the parasites and the stippling in the host cells were well defined after 2 seconds' staining: at 3 minutes the uninfected erythrocytes were very pale, with the infected cells and stippling prominently stained and in sharp colour contrast.

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DR. McWILSON WARREN, MR. KADIR ALI and
DR. GORDON F. BENNETT
(U.S.P.H.S., Far East Research Project, IMR, Kuala Lumpur)
and
PROF. A. A. SANDOSHAM
(Division of Malaria and Filariasis, IMR, Kuala Lumpur)

Morphology of **Plasmodium fieldi** in different species of the genus **Macaca**

Plasmodium fieldi was originally described from *Macaca nemestrina* from Malaya and the morphological features which give this parasite specific status are quite distinct. However, recent observations in this laboratory have shown that there are consistant differences in the morphology of peripheral blood stages of *P. fieldi* in various members of the genus *Macaca*. Eyles et al. (1962) studied one strain of this species of *Plasmodium* in *Macaca mulatta* and noted that the coalescence of the eosinophilic inclusion bodies was much less frequently seen in this monkey than in *Macaca nemestrina*, where this striking characteristic is quite diagnostic. We have now observed this parasite in a number of *M. mulatta*, *M. nemestrina* and *M. irus* and with a moderately infected blood smear, which is well stained, feel reasonably confident not only of a species diagnosis of the parasite but of the host animal as well.

Briefly reviewed, the appearance of *P. fieldi* in the peripheral blood of the above mentioned three species of macaques is as follows.

Macaca nemestrina: Trophozoites — cytoplasm compact; vacuole frequently large; stippling of the Schuffner type but abundant and coarse, tending to coalesce into large eosinophilic masses in older forms; pigment evently distributed; infected cell not enlarged or only slightly enlarged. Schizonts averaging 12 merozoites when mature; inclusion bodies oriented peripherally to form an intense eosinophilic ring around the parasite.

Macaca irus: Trophozoites — cytoplasm compact but not so dense as that seen in *Macaca nemestrina;* vacuole large; stippling of the Schuffner type but less abundant than in *M. nemestrina* — does not coalesce into large masses, cell enlargement marked. Schizonts as in *M. nemestrina* except that the inclusion bodies remain coarsely granular and the eosinophilic ring is much less intense.

Macaca mulatta: Trophozoites — cytoplasm compact; vacuole large; stippling more coarse than that of *P. cynomolgi* but does not form large masses; more cell enlargement than in *M. nemestrina* but less than in *M. irus*. Schizonts as in *M. irus*.

Comment: It is sometimes difficult to separate *P. fieldi* from *P. cynomolgi* in *M. irus* and *M. mulatta*. However, the compactness of the cytoplasm, the relative lack of amoeboidicity and the quite coarse nature of the inclusion bodies makes specific identification easy in moderate infections. The very light natural infections in *M. irus* are more difficult and frequently impossible to separate from *P. cynomolgi*. However, this parasite is quickly identified in *M. nemestrina* and in experimental infections in *M. mulatta* produce a much less intense parasitaemia than *P. cynomolgi*.

Demonstrations showed Giemsa-stained thin blood films from *Macca irus*, *M. mulatta* and *M. nemestrina* infected with *P. fieldi*. The morphological variations mentioned here are seen in these specimens and in black and white sketches.

REFERENCE

Eyles, Don E., A. B. G. Laing and Yap Loy Fong, 1962. **Plasmodium fieldi** sp. nov., a new species of malaria parasite from the pig-tailed macaque in Malaya. **Ann. trop. Med. Parasit. 56,** 242-247.

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DR. GORDON F. BENNETT and DR. McWILSON WARREN
(U.S.P.H.S., Far East Research Project, IMR, Kuala Lumpur)

and

MR. W. H. CHEONG
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Variants of **Plasmodium cynomolgi** identified by characteristics of the sporogonic cycles

The identification of morphologically indistinguishable variants of a *Plasmodium* has always been arduous and time consuming. Any means by which identification could be simplified would be of great advantage. Usually, identification of strains has been based on differences appearing during the schizogonic cycle in the vertebrate host. Relatively little attention has been paid to differences in the sporogonic cycle, although a number of potentially useful characteristics occur.

Recently, two new strains of *Plasmodium cynomolgi* were isolated by this laboratory from west-central Cambodia and the Gombak region near Kuala Lumpur. Initial studies on the schizogonic cycle indicated that both new strains differed from the previously known *cynomolgi* parasite from Malaya. However, these differences did not become apparent until the course of infection in several animals had been studied for 30 days or more. In addition, the two new strains could not be separated from each other on the basis of differences in the schizogonic cycle.

Studies on the sporogonic cycle of the three strains *P. cynomolgi* established that differences occurred in (1) the rate of development of the cycle, (2) the size of the mature oocysts and (3) the susceptibility of different Malayan anophelines. The rate of sporogony differed sharply between the Cambodian strain (completed in 7.5 days) and the other cynomolgis (completed in 9.5 days). Oocysts of the former parasite consistently averaged about one-third smaller than those of the latter. Marked differences were also noted between the susceptibility of various Malayan anophelines to these malarias. The susceptibility of *A. maculatus* to the three cynomolgis is illustrative of the type of difference noted. In this mosquito, the Cambodian strain developed both oocyst and sporozoite infection in nearly all those fed. *P. c. bastianellii* developed to the oocyst stage in nearly all but only 60-80% showed sporozoite infection and the Gombak strain was similar to *P. c. bastianellii* except that less than 10% of the mosquitoes developed a sporozoite infection. Combination of these data with the rate of sporogony gave an accurate identification of the strain in about one-third of the time required by studying the schizogonic cycle. Numerous other differences in the susceptibility of various Malayan anophelines were demonstrated in chart form.

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Acridine Orange Staining of Some Blood Parasites

The staining of tissues with Acridine Orange is widely used for exfoliative Cytology in Gynaecology and the malignancies of the respiratory tract (Bertalanffy and Bertalanffy, 1960). The stain gives a bright polychrome picture when examined under a fluorescent microscope. The method depends on the differentiation of RNA and DNA by Acridine Orange. The DNA of the nucleus gives a green or yellow fluorescence, while the RNA of the cytoplasm gives an orange to bright red fluorescence. The proliferating malignant cells are readily characterized because of the high RNA content.

In case of blood parasites the stain has been used by Rothstein (1958), who found it a useful screeming procedure for detecting various parasites.. In this study we have tried the stain on Microfilaria, Plasmodia and Toxoplasma. In all cases the stain was used after fixing the cells and the procedure given by Humason (1962) was followed.

The microfilaria of *Brugia pahangi* fluoreced brightly, were easily recognizable and their internal structures could be clearly differentiated. The cytoplasm gave a bright orange fluorescence indicating a high RNA content. The nuclei gave a bright yellow fluorescence indicating a high DNA content.

In case of *Plasmodium berghei* the parasites were visible as localized fluorescent areas in the infected cells and were readily recognizable. The internal structure was, however, not clear enough to identify the different stages.

In case of *Toxoplasma gondii* the parasites showed a beautiful polychrome staining. The cytoplasm was stained orange to bright red and the nucleus bright yellow.

REFERENCES

Bertalanffy, L. von and Bertalanffy, E. D. (1960). A new method for cytological diagnosis of Pulmonary Cancer. **Ann. N.Y. Acad. Sci. 84,** 225-238.

Humason, G. L. (1962). **Animal Tissue Techniques.** W. H. Freeman & Co., San Francisco.

Rothstein, N. (1958). Vital staining of blood parasites with Acridine Orange. **J. Parasitol. 44,** 588-596.

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A Malayan bat trypanosome resembling **T.cruzi** and **T.vespertilionis**

Trypanosomes have been known as parasites of bats since at least 1899 when Dionisi described such a parasite, without naming it, from a species of *Miniopterus* in Italy. In 1904 Battaglia described a small trypanosome from a European *Vesperugo* as *Trypanosom vespertilionis*. This name has survived and has been applied to many trypanosomes of African, American, and European bats. Other *T.vespertilionis*-like forms have been described under a variety of names: it is doubtful whether many of these specific names are valid. (WENYON — PROTOZOOLOGY I, pp. 479-482. 1926).

T.vespertilionis is of outstanding interest because of its close relationship to *T.cruzi*, the parasite responsible for Chagas disease in the Americas. The parasites are similar morphologically and in having a tissue developmental cycle which sets them apart from other mammalian trypanosomes. South American workers have concluded that *T.cruzi* and *T.vespertilionis* should be placed in a separate genus, *Schizotrypanum*, because of the unique life cycle and morphological characteristics.

Although *T.vespertilionis*-like parasites are now known from Europe, Africa, the Americas, and Australia (*T.hipposideri* Mackerras, 1959) none have been reported to date from any part of Asia. Nor has a *T.cruzi*-like trypanosome been found in any other Asian mammal — in Asia. (There are a few *T.cruzi* records for primates imported from Asia to Europe and North America, but in all cases the infections could have been acquired in transit or after arrival in the zoo or laboratory.)

Most of the other bat trypanosomes constitute a group of related species, resembling *T.megadermae*, found to date only in Africa and Latin America. The only trypanosome reported for an Asian bat was found by Donovan (about 1904) in an Indian "flying fox" (*Pteropus medius*). Probably this parasite is related to or conspecific with *T.pteropi* Breinl, 1913 of Australian flying foxes. This trypanosome is in some morphological respects intermediate between those of the *T.megadermae* and *T.vespertilionis* groups. It is large and the nucleus lies near mid-body (as in *T.megadermae*), but there is a large subterminal kinatoplast (as in *T.vespertilionis*).

The subject of this demonstration is a small trypanosome found in two of 31 *Tadarida johorensis* (free-tailed bats) collected in October 1963 at Ampang, near Kuala Lumpur, Selangor. A search of the available thin and thick blood films disclosed about 15 intact trypanosomes of which 10 were suitable for measurement. Studies have not so far included examination of tissues from these bats for possible developmental stages. Like *T.pteropi*, the trypanosome of *Tadarida* is in certain respects intermediate in morphology between the two major bat groups. It resembles *T.vespertilionis* in having a large subterminal kinetoplast (equally large in thick and thin films), but it is somewhat larger than typical members of the group. The most striking difference is in the position of the nucleus, which is posterior to mid-body in all specimens. Measurements (ranges, in microns) are as follows: total length — 20.5 - 23.5, body length — 13 - 16.5, flagellum — 5 - 7.5, posterior end to mid-nucleus — 5 - 6, mid-nucleus to anterior end — 7.5 - 11.5, maximum breadth — 1.5 - 2, diameter of kinetoplast — 0.75, length of nucleus — 1.5 - 2. The parasite probably must be described as a new species, particularly because of the position of the nucleus, but in some morphological characters it is closer to *T.cruzi* than to the other known trypanosomes of bats.

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A Study on the Natural History of Immunity to Malaria in Protected and Unprotected Populations of Australian New Guinea

A tanned sheep erythrocyte hemagglutination test for the measurement of antibody in malaria has been described by Desowitz and Stein (*Trans. R. Soc. trop. Med. Hyg. 1961* 56,) and Stein and Desowitz (WHO/Mal/393, 1963; *Bull. W.H.O.* in press). It was of obvious interest to apply the test to a population living in an area where malaria is endemic in order to correlate serological results with our knowledge of immunity gained from clinical and epidemiological studies. The area chosen was the Maprik District of Australian New Guinea. A considerable amount of epidemiological data was already available on the population (Peters, W. 1960. *Trans. R. Soc. trop. Med. Hyg., 54,* 242) and some village groups have been subject to malaria control. There is also a programme to bring the population living under conditions of holoendemic malaria under protection by spraying and mass drug distribution. It is possible therefore to obtain some idea of the changes of the immunological picture of a population after control measures have been instituted.

The population of a group of closely associated villages (Unprotected Group) were presurveyed in June 1963. Parasitaemia rate, spleen rate, and liver enlargement were assessed. In August the same group was again surveyed and at the same time sera was obtained for serological studies. An *ad hoc* survey was also made of a group (Protected Group) in which malaria has been controlled since 1959 by twice yearly DDT spraying and mass distribution of a chloroquine and pyremethamine mixture. The hemagglutination test was carried out in Singapore. Two antigens were used, *Plasmodium cynomolgi* and *P. coatneyi*, since previous studies indicated the former to be antigenically related to *P. vivax* and the latter to *P. falciparum*. The results are shown in the two figures demonstrated. It will be seen that in the Unprotected Group there is a gradual rise in average hemagglutination titre from infancy to adulthood. Comparison of the 1-2 yr group with the adults shows that this increment is approximately 5 times with *P. cynomolgi* antigen and 3 times with *P. coatneyi* antigen. The differences in average titre between the Unprotected Group and Protected Group are striking. For the 1-2 yr age group the average titre of the Protected population approximately is 1/10 — 1/15 that of the Unprotected population, for the 3-4 yr group 1/7 — 1/20, and for adults about 1/2. Unfortunately the number of sera collected from the Protected Group was limited and not all age groups included.

In September 1963 the Unprotected Group was given mass drug treatment and the villages sprayed with DDT. It is planned to make similar yearly surveys of this population to determine the effect of malaria control on the immunological picture.

Age group	Number tested	Average titre (reciprocal) *P. cynomolgi* antigen	Average titre (reciprocal) *P. coatneyi* antigen
UNPROTECTED GROUP			
1 - 2 yrs	28	2,271	3,078
3 - 4 yrs	48	7,541	5,470
5 - 6 yrs	50	5,416	5,742
7 - 9 yrs	44	10,386	7,004
10 - 15 yrs	54	8,120	7,348
Adults > 16 yrs	232	11,190	8,181
PROTECTED GROUP			
1 - 2 yrs	26	146	338
3 - 4 yrs	18	300	711
Adults	27	4,251	5,911

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held under the auspices of the ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE on January 10, 1964 at the INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR

PROF. R. S. DESOWITZ
(Department of Parasitology, University of Singapore)

and

DR. J. J. SAAVE
(Malaria Service, Department of Public Health, Territories of Papua and New Guinea)

A comparison of the serum proteins of a population living under conditions of holoendemic malaria and one subject to malaria control

The immunological survey and the nature of the Protected and Unprotected Groups were described in our demonstration I. Serum proteins were analyzed by the Antweiler micro-Tiselius method of moving boundary electrophoresis. A graph comparing average gamma-globulin levels in both groups and a table showing average values for all serum protein fractions was demonstrated. In the unprotected group the gamma-globulin was relatively high for all ages, ranging from 2.03 to 2.52 grams %. There is apparently little difference between age groups although the lowest value 2.03 grams % was found in the 1-2 yr olds and the highest 2.52 grams % in the adults. In the three age groups of the protected population, 1-2 yrs, 3-4 yrs, and adults, that were tested the average gamma-globulin level was considerably lower, being 1.33, 1.40 and 1.80 for the three groups respectively. There does not appear to be any significant differences in the beta and alpha globulins or the albumin between the unprotected and protected groups except that albumin level in the adults of the former group might be slightly decreased.

Age group (yrs)	No	Average serum proteins (grams %)				
		gamma-globulin	beta-globulin	alpha-globulin	Albumin	Total protein
1 - 2 Malarious group	16	2.03	1.09	0.93	3.35	7.37
1 - 2 Protected group	8	1.33	1.04	1.18	3.90	7.45
3 - 4 Malarious group	30	2.37	0.94	0.90	3.25	7.44
3 - 4 Protected group	14	1.40	0.86	1.16	3.48	6.90
5 - 6 Malarious group	26	2.44	1.02	0.75	3.21	7.42
7 - 9 Malarious group	24	2.25	1.11	0.85	3.12	7.33
10 - 15 Malarious group	29	2.22	1.14	0.75	3.25	7.37
Adults Malarious group	47	2.52	1.37	0.58	2.98	7.58
Adults Protected group	23	1.84	1.18	0.85	3.46	7.36

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MRS. B. STEIN and Prof. R. S. DESOWITZ
(Department of Parasitology, University of Singapore)

Haemagglutinating Antibodies in Simian Malaria

Sera of 28 rhesus monkeys were obtained from Dr. McWilson Warren and the late Dr. Don Eyles of IMR, Kuala Lumpur.

These monkeys were infected with 8 different simian malarias.

These sera were posted by air mail in ice-cooled thermos flasks without preservatives and tested shortly after arrival.

The method of haemagglutination test employed was essentially the same as described by us in 1962 and 1963 except that the absorption of the sera was carried out with formalized tanned sheep cells, instead of with fresh sheep cells.

Figures given in the following table are average titres for monkeys infected with same species of malaria.

In case of *P. gonderi* we had serum of one monkey only, in the rest there were sera of 2-5 monkeys.

Sera from two monkeys known not to have any malaria infection are included as normal controls.

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MR. R. B. GRIFFITHS
(United Nation's Food and Agricultural Organization)

Leucocytozoon caulleryi in the domestic fowl in Southeast Asia

Within recent years several serious outbreaks of acute leucocytozoonosis in fowls have been reported from countries in southeast Asia and from Japan.

The author's experience has been in Burma where the species involved in outbreaks in 1962 and 1963 has been *Leucocytozoon caulleryi*.

The demonstration comprised a description of the disease caused by *L. caulleryi* infection.

The disease, which generally affects birds at 3-5 months of age, is acute. Before death, there may be expectoration of blood-stained ropy mucus from the respiratory tract, or the passage of blood through the cloaca, but very frequently birds die without showing symptoms. The mortality rate is frequently about 20% in affected flocks, but this figure may be exceeded.

At autopsy, haemorrhages may be observed in almost all of the tissues but the most serious and most extensive haemorrhages are found in the lungs and kidneys. There may be gross haemorrhage from the kidneys into the peritoneal cavity. Megaloschizonts are regularly present in the organs and tissues which show haemorrhages. The megaloschizonts are found therefore throughout the lungs and kidneys as well as in the liver, spleen, pancreas, ovaries, testes, on the mucous membranes of the alimentary and respiratory tracts, on all the serous membranes, the meninges, and in the subcutaneous fascia.

In the visceral organs, the megaloschizonts frequently occur as scattered individual bodies measuring up to 300 microns in diameter; each is therefore just visible to the naked eye as a cream coloured round structure. They also occur in groups in these organs, but the tendency to the formation of collections of megaloschizonts is more pronounced on the mucous and serous membranes. A group of megaloschizonts, which may consist of six or more of these structures, is frequently oval in shape and may reach 1.5 mm x 2 mm or more in size. A group of megaloschizonts frequently has a variegated cream and red appearance which results from the entry of blood into the interior of megaloschizonts that have discharged their merozoites.

To demonstrate megaloschizonts in the tissues it is not necessary in routine laboratory diagnosis to resort to histo-pathological methods. Crush preparations, prepared by crushing small portions of lung, kidney or other tissues between two glass slides, serve adequately for the demonstration of megaloschizonts by naked eye examinations or observation under low power magnification.

Blood smears stained with a Romanowsky stain show one or more of the following, depending upon the stage of infection when examination is made:

(a) Merozoites in the plasma.

(b) Merozoites in the erythrocytes. Frequently there is multiple invasion by the merozoites which each measure about 1.5 μ in diameter.

(c) Developing gametocytes in immature erythrocytes. At this stage the parasite causes a round distortion on the host cell in contrast to spindle-shaped distortion which is seen with certain other species of *Leucocytozoon*.

(d) Extra-cellular mature gametocytes. At this stage there is usually no trace of host cell, although occasionally a remnant of the host cell cytoplasm, but not the nucleus, may be found. The mature gametocytes are round

or sub-spherical and measure approximately 12-14 μ in diameter.

The demonstration included an exhibit of megaloschizonts and haemorrhages in the kidney, a group of megaloschizonts under the serosa of the small intestine, and blood smears showing the stages described above.

The assistance of U Tha Khin, Parasitologist, Veterinary, Educational and Research Institute, Burma, who has collaborated with the author in the investigation of leucocytozoonosis is acknowledged.

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PROF. A. A. SANDOSHAM and MR. S. SIVANANDAM
(Division of Malaria and Filariasis, IMR, Kuala Lumpur)

Filarial worms in the mousedeer **Tragulus javanicus**

Two filarial infections occur in the local mousedeer (*Tragulus javanicus*, sometimes in the same animal as in this case.

Setaria javensis was first described in 1922 by Vevers from a female worm obtained at the London Zoo. Sandosham (1953) described the male from a mousedeer that died in Kuala Lumpur. Since then several specimens have been collected from mousedeer in Malaya both from the East Coast (Pahang) and Bukit Mandul (Selangor).

From some of the animals examined specimens of *Papillosetaria* sp. were also obtained. Two species belonging to this genus have been described both from Java, *P. traguli* Vevers, 1922 and *P. veversi* Maplestone, 1931.

Demonstrations showed adult *Setaria javensis* and adult *Papillosetaria* sp. A thick blood film showed the marked differences in the microfilariae of the two filarial worms.

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PROF. A. A. SANDOSHAM and MR. S. SIVANANDAM
(Division of Malaria and Filariasis, IMR, Kuala Lumpur)

A new filarial worm from the flying lemur (Cynocephalus variegatus)

These filarial worms were obtained from the subsutaneous tissues in the back from flying lemurs collected by Dr. F. L. Dunn in N. Borneo and Kepong (Malaya). One flying lemur obtained in Perlis (N. Malaya) showed microfilariae in the blood.

The adult females measure from 85 to 155 mm. in length while the male is only 20 mm. long. The microfilariae measure from 120 - 125 μ in length and 2.5 - 3.5 μ broad.

The specimens are being studied in the Division of Malaria and Filariasis Research.

The demonstration showed adult worms and microfilariae.

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W. H. CHEONG and A. H. Omar
(Division of Entomology, IMR, Kuala Lumpur)

Preliminary figures on the developmen of **B. malayi** in a laboratory and a natural vactor

Laboratory bred mosquitoes, *Aedes (s) aegypti* were fed on a *B. malayi* carrier (cat) with a blood concentration of 16.1 microfilariae per cmm, and were dissected at daily intervals to observe the rate of growth. A proportion of the developing larvae are measured and the figures compared with those obtained by Wharton (1957) for the natural vector *Mansonia dives*. The number of larvae present and the stage of development will also be recorded eventually. The growth and appearance of the larvae correspond fairly well with those of Brug (1931) Feng (1936) and Wharton (1957) with a minor difference in the time of development.

However, it should be noted that this is the first of a series of feedings to be carried out and therefore the findings are not as yet final. Wharton measured stage I larvae in saline and stages II and III in Bless fluid. The present study differs in that all the stages were dissected and carefully teased out in serum saline and fixed in iodine fumes, allowed to dry and stained in giemsa before measurement.

It was noted that development in *Aedes (s)* aegypti followed a similar pattern to that of *M. dives* but from about 6.5 days onwards development seemed to be slower than that in *M. dives* so that there were many which were still in their Stage II at 9.5 and 10.5 days.

Furthermore quite a number of chitinised Stage I and II worms were noted. These obviously were all dead. Confirmation of this was made on the 12th and 13th day by dissection when not many infective larvae were found, which indicated that although many microfilariae may be ingested initially, not many developed through to stage III.

In may seem therefore, that the laboratory vector is not as good a host as the natural vector from this experiment. However, further investigation has to be made before we can be sure. The one great advantage *Aedes (s) aegypti* has over *Mansonia* as a laboratory vector is that it only takes a week to breed large numbers where as *Mansonia dives* takes about a month with special care.

REFERENCES:

Wharton, R. H. (1057). Observations on the development of **Wuchereria malavi** in **Mansonia (Mansonioides) longipalpis. Ann. trop. Med. Parasit., 51,** 278.

Brug, S. L. (1931). Filariasis in the Dutch East Indies. **Proc. R. Soc. Med., 24,** 663.

Feng, L.C. (1936). The development of **Microfilaria malayi** in **A. hyrcanus** var. **sinensis Wied. Chinese Med. J.,** suppl. I, 345.

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DR. PAUL F. BASCH
(University of California International Center for Medical Research, IMR, Kuala Lumpur)

Some Malayan Schistosomes

The schistosome trematodes are of great interest because of the three important species which parasitize man in various parts of the world. Here in Malaya human schistosomiasis has never been reported, but there are several species of avian and mammalian schistosomes. The cercariae of these non-human parasites can cause a dermatitis in man.

The life cycle of a species of *Trichobilharzia* from padi fields in Negri Sembilan has been completely worked out, and drawings of most of the stages are on display. The species has not yet been identified with certainty, but it is hoped that this will be accomplished soon. The worms develop and mature very rapidly, producing viable eggs in ducks in some cases only 13 days after penetration of cercariae. The ducks will lose their infection (i.e., stop shedding eggs) in some weeks. Immunity to re-infection has not yet been investigated. In mice this avian parasite can cause large haemorrhages and considerable damage to the lungs, but it will not develop to the adult stage. This demonstrates at least that the parasite can penetrate further than the skin in some mammals, and leaves open the question of possible systemic involvement in man.

Another parasite, of the genus *Schistosoma,* is now under study. *Indoplanorbis* snails shedding large numbers of cercariae have been collected within five miles of the I.M.R. laboratory, and mamals of several species have been exposed to the larvae. (What appears to be the same trematode has also been found in Negri Sembilan Indoplanorbis snails). Infection of mice and hamsters in easy. Hundreds of adult worms may be removed from the portal vein, mesenteric vein, and liver some time after a single exposure to cercariae. The worms do not appear to become sexually mature in these hosts, however. A *Macaca mulatta* monkey failed to become infected after repeated exposures over a period of about two months. It has been possible to hatch living, active miracidia from eggs in cow dung collected near the infected snails, but the eggs themselves have not yet been observed microscopically. Thus the species of the worm cannot yet be stated with complete confidence, but it appears to be *Schistosoma spindale* (or *spindalis*) Montgomery, 1906.

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DR. E. BALASINGAM
(Department of Zoology, University of Malaya, Kuala Lumpur)

The Parasitic growth of **Placocorus lotoris** (Schwartz, 1925) Webster, 1956 (Ancylostomatidae: Nematoda)*

The parasitic growth of strongylid namatodes have been well studied in the past. Most noteworthy are the investigations on *Heligmosomum muris* by Yokogawa (1922) *Nippostrongylus muris* by Twohy (1956) and *Cooperia curticei* by *Sommerville* (1960). The present study concerns the parasitic growth of *Placocorus lotoris* which is an intestinal nematode parasitic in North American raccoons and skunks.

Infective larvae obtained from faeces-charcoal cultures by Baermann technique was administered orally to raccoons. The animals were killed at specific intervals after infection and examined for presence of parasitic stages. Mean measurements of the parasitic larvae are shown in Table I. Figure 1 represents the growth curve drawn from these measurements.

(Fig. 1, not reproduced here).

Measurements (mm.)

Age	Parasitic third stage (sex not differentiated)	Fourth Stage		Fifth Stage	
		Male	Female	Male	Female
1 day	0.628	–	–	–	–
2 days	0.621	–	–	–	–
3 days	0.639	0.724	0.885	–	–
5 days	0.647	1.537	1.812	–	–
7 days	–	2.043	2.216	–	–
10 days	–	2.012	2.256	2.423	2.710
15 days	–	–	–	3.496	3.972
20 days	–	2.096	2.302	4.025	4.753
25 days	–	2.147	2.322	5.272	6.252
30 days	–	–	–	5.652	6.802
35 days	–	–	–	5.781	6.912
40 days	–	2.152	2.286	5.602	7.081
3 months	–	–	–	5.706	7.128

Table I — Growth of parasitic larvae

It is observed that the parasitic third stage larvae do not undergo any increase in size. They enter the fourth stage in 48-72 hours after infection. The fourth ecdysis and the associated lethargus occur between 7 and 10 days. Although most of the larvae undergo normal development to maturity in about 30 days, some of the fourth stage larvae appear to be unable to complete development and to attain the fifth stage. This phenomenon has been observed among parasitic stages of *Haemonchus placei, Ostertagia circumcinta* and *Cooperia curticei* (Bremner 1956, Sommerville 1954, 1960). Sommerville (1960) pointed out the

uncertainity as to whether retarded development was the consequence of an initially unsuitable environment or an environment rendered unfavourable as a result of infection. Whichever the case may be, the fact that the majority of the larvae undergo normal development of maturity while others are retarded indicates that among a given lot of larvae, there is a considerable range in variation in their ability to adjust themselves to the host environment and finally to reach the adult stage.

REFERENCES

BREMNER, K.G. (1956) **Austral. J. Zool.** 4, 146-151.
SOMMERVILLE, R.I. (1954) **Austral J. agric. Research,** 5, 130-140.
SOMMERVILLE, R.I. (1960) **Parasitology** 50, 261-267.
TWOHY, D.W. (1956) **Amer. J. Hyg. 63,** 165-185.
YOKOGAWA, S. (1922) **Parasitology, 14,** 127-166.

* Studies undertaken at the Institute of Parasitology, McGill University, Montreal in 1962/63.

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PROF. LIE KIAN JOE and MISS T. UMATHEVY
(Division of Virus Research & Medical Zoology IMR, Kuala Lumpur)

An undescribed 43-spined **Echinoparyphium** species and its life-cycle

The life-cycle of an undescribed 43-spined *Echinoparyphium* species is established in the laboratory. The first intermediate host is the fresh water snail *Lymnaea rubiginosa*. The sporocysts develop in the heart cavity. The first cercariae are released 22 day after exposure of the snail to miracidia. The metacercariae develop in the same snail and in other fresh water snails. The adults live in the small intestine of pigeons, ducklings and birds such as the spotted munia (*Lonchura punctulata fretensis*), the black-headed munia (*Lonchura atricapilla sinensis*) and the Java sparrow (*Padda oryzivora*). The adult worm, rediae, cercaria, metacercaria and egg were shown. Drawings of the adult worm and of all larval stages were also exhibited. The complete life-cycle and morphology of the worm and the larval stages will be published later.

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PROF. LIE KIAN JOE and MISS T. UMATHEVY
(Division of Virus Research & Medical Zoology IMR, Kuala Lumpur)

An undescribed 37-spined **Echinostoma** species and its life-cycle

The complete life-cycle of an undescribed 37-spined *Echinostoma* has been worked out under experimental conditions. The adult worm as well as egg, miracidium, rediae, cercaria and metacercaia were shown. Drawings of the mirecidia, sporocyst, rediae, cercaria, metacercaria and adult worm were also exhibited. The first intermediate host is the fresh water snail *Lymnaea rubiginosa*. The sporocyst develops in the heart cavity. There are at least 3 redial generations. Cercariae are released 19 days after exposure of the snail to miracidia. They encyst in the same and in other fresh water snails such as: *Indoplanorbis exustus*, *Gyraulus convexiusculus*, *Bellamya ingallsiana* and *Pila scutata*. The adult worms develop in the rectum of pigeons, ducks, the little cuckoo-dove (*Macropygia ruficeps malayanum*), the black-headed munia (*Lonchura atricapilla sinensis*), the spotted munia (*Lonchura punctulata fretensis*) and the Java sparrow (*Padda oryzivora*). The complete life cycle as well as the morphology of the adult worm and the larval stages will be published later.

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DR. K. RHODE
(Department of Zoology, University of Malaya, Kuala Lumpur)

Studies on the distribution of **Opisthorchis** in Malaya

In a previous survey of *Opisthorchis* in cats and dogs, conducted in 1960 and 1961, 3 out of 70 cats were found to be infected. None of the 13 dogs, then examined, was infected (Rhode, 1962, *Med. J. Malaya, 17*, 94). Since then, 99 other cats from various parts of Malaya have been examined. The combined results of these two surveys are given below.

Locality	Number of cats examined	Number of cats infected with *Opisthorchis*	Frequency of infection %
Kuala Lumpur	67	1	1
Kepong	48	8	17
Ipoh	30	3	10
Kota Bharu	15	0	0
Kampongs south of Kuantan on the Pahang River	9	0	0
Total	169	12	28

Table 1: *Opisthorchis* infections in Malayan cats.

The cats from Kuala Lumpur were from Petaling Jaya, Kampong Bahru, Sentul and the centre of town. Of these, only one cat (from Sentul) harboured 1 *Opisthorchis*. The intensity of infection in cats from Ipoh was 1, 7 and 8 (average 5), that in cats from Kepong 1, 2, 2, 2, 2, 10, 14 and 16 (average 6). Most cats were also infected with another liverfluke, *Platynosomum fastosum* Kossack, 1910.

The low intensity of the infections reinforce the author's opinion (Rhode, 1962, Med. J. Malaya 17 : 94) that *Opisthorchis* is of less importance in Malaya than in Thailand, where the parasite is widely distributed among cats, dogs and man, especially in the North-Eastern Provinces (Sadun, 1955, *Amer. J. Hygiene*, 62, 81-115). Nevertheless, because of the relatively high frequency of infection in cats from Kepong and Ipoh, it seems to be advisable to look for *Opisthorchis* infections in future surveys among the human population. In this connection it should be mentioned that Sadun found only 4 out of 20 cats and 6 out of 94 dogs infected in areas of high endemicity in the northeast of Thailand, where approximately one fourth of the human population is infected.

There is considerable confusion about the taxonomic status of the South-East Asian form of *Opisthorchis* from cats, dogs, and man. According to Sadun, the form occurring in Thailand must be included in the species *O. viverrini* (Poirier, 1886) Stiles and Hassall, 1896, because the ratio of the mean length over the mean breadth of the eggs is 1.75 (in *O. viverrini* 2.0, in *O. felineus* 2.75). Furthermore, as in *O. viverrini*, the testes are located in close proximity to the caudal end of the worm, and the mean length of the worms and the eggs is similar in the specimens from Thai-

land and *O. viverrini*. Bisseru (1957, *J. Helminth, 31*, 187-202) considers *O. viverrini* as synonymous with *O. felineus* (Riv., 1884) Blanch, 1895, while Gupta and Pande (1963, J. Helminthology 37 : 291-298) consider *O. tenuicollis* (Rud., 1819) Stiles and Hassall, 1896 as the valid species, and *O. felineus* and *O. viverrini* to be synonymous. It is perhaps best to leave open the specific status of the Malayan form (or forms) until such time as the life-cycle and the developmental morphology of the parasite are known and can be compared with those of forms from elsewhere.

5 experimental groups, each consisting of 5-10 individuals of the snail *Digoniostoma pulchellum* (Bens.), were exposed to miracidia of *Opisthorchis* from Malayan cats. This snail was chosen, because it is closely related to *Bithynia leachi*, the intermediate host of the European and North-Asiatic *Opisthorchis*. Cercariae of *Opisthorchis* did not emerge from any of these snails, and, on dissection, no larval *Opisthorchis* were found. In addition, approximately 400 specimens of *Digoniostoma pulchellum* from Kepong were examined for natural infections of *Opisthorchis*. None of these was infected.

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MR. WONG SOON KAI
(Lau Keng Howe Hospital, Sibu, Sarawak)

and

PROF. LIE KIAN JOE
(Division of Virus Research & Medical Zoology IMR, Kuala Lumpur)

Poikilorchis eggs obtained from a second case of subcutaneous retro-auricular abscess in Sarawak

Demonstration of eggs obtained from a retro-auricular abscess occurring in a Dyak boy, aged 10. This is the second case of retro-auricular abscess caused probably by a trematode of the genus *Poikilorchis*. The first case occurred in a 8-year old Dyak boy. (Lie Kian Joe, et al. 1962, *Med. J. Malaya*, 17, 37-39).

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held under the auspices of the ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE on January 10, 1964 at the INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR

MR. C. K. OW YANG, MR. B. L. LIM and PROF. LIE KIAN JOE
(Division of Virus Research & Medical Zoology, IMR, Kuala Lumpur)

Some Observations on the presence of Immunity in Rats to **Angiostrongylus cantonensis** (Chen)

Evidence from rats in the laboratory indicates that these animals appear to develop immunity after initial exposures to small numbers of *A. cantonensis* larvae. A dosage of 500 larvae fed to each of 5 white rats that have received 7 monthly exposures of 10 larvae each prior to testing, produced an average recovery of 20 worms per host, with no apparent signs of ill health in any of the rats at the time of necropsy two months after feeding. This significantly differs from the control where an average of 190 worms per host was obtained, with all the rats dead within 23-31 days after exposure.

Evidence of immunity also appears to occur in rats in nature. An average of 8 worms per rat was recovered from 57 infected *R. jalorensis* from an oil-palm plantation. When 10 infected *R. jalorensis* from the same locality were given an inoculum of 300 *A. cantonesis* larvae each, the average recovery was 16 worms per rat. The same inoculum given to laboratory-bred *R. rattus jarak* (closely related to *R. jalorensis*) and 10 white rats produced average recoveries of 94 worms per rat in both cases.

Since in nature, the number of worms recovered from any single *R. jalorensis* has never even approached that expected in the laboratory, it may be surmised that these rats had some degree of immunity, inherited or acquired or both. These possibilities are being investigated.

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DR. M. A. FERNANDO and DR. H. A. WONG
(Departments of Parasitology and Biochemistry University of Singapore)

Demonstration of the route of absorption of glucose by **Ancylostoma caninum** using autoradiographic techniques

During the course of investigations into the glucose metabolism of *Ancylostoma caninum* it became necessary to determine the route of absorption of glucose in this nematode — through the cuticle or via the gut membrane.

Autoradiographic technique was used to show the uptake of radioactive glucose by the parasite. This method allows the detection of atoms of an element in minute quantities and its location in the tissues can be studied.

A. caninum was incubated in dog serum containing radioactive glucose (4 μc per 1.5 mg glucose) for $\frac{1}{2}$ hour at 37°C and washed several times in saline to remove extraneous glucose. The parasites were cut into lengths of 2-3 mm and fixed in Carnoy's fluid at 4°C. Paraffin sections of 8 μ were prepared in the usual manner and stripping film method of autoradiography was employed. The slide with the film emulsion was developed after 14 days and the sections stained in Erlich's haematoxylin.

The photomicrographs of the autoradiographs show clearly that *A. caninum* absorbs C-14 glucose mainly if not entirely via the gut membrane with hardly any absorption through the cuticle.

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DR. McWILSON WARREN and DR. GORDON F. BENNETT
(U.S.P.H.S., Far East Research Project, IMR, Kuala Lumpur)

and

MR. W. H. CHEONG
(Division of Entomology, IMR, Kuala Lumpur)

Natural Plasmodial Infections in **Mansonia (Coquillettidia) crassipes**

Field investigations to determine the vectors of simian malaria have been conducted in various ecological areas of Malaya. Such investigations involved trapping with animal baited net traps both on the ground and in the forest canopy; daytime resting catches; and bare leg catches. All mosquitoes were returned to laboratories at the Institute for Medical Research and examined for malaria parasites. Such examinations were carried out with culicines as well as anopheles.

In October, 1963 field studies were conducted at Pacific Tin north of Kuala Lumpur. This is an area of extensive fresh water swamp forests where a large percentage of monkeys are infected with malaria. Large numbers of the *Anopheles umbrosus* group as well as members of the genus *Mansonia* were found. During the process of routine dissections one *Mansonia crassipes* was found to be infected with a malaria parasite. Both the gut and the salivary glands were positive. Only 39 mosquitoes of this species had been dissected from this area and all of the remainder have been negative for malaria.

The sporozoites from the positive mosquito were wet-fixed in iodine fumes and stained with Giemsa. On examination the sporozoites were found to be similar both in size and shape to those of *Plasmodium traguli*. The oocysts on the midgut were also similar to those of *P. traguli*. It is interesting that *A. umbrosus* mosquitoes from the Pacific Tin area are frequently infected with this parasite. The mosquito stages of *P. traguli* are quite different from those of primate or bird malarias which have been studied in this laboratory. To our knowledge, there are no reports of non-anopheline vectors of mammalian malaria parasites.

It is interesting to note that this mosquito was also infected with *Setaria* sp. larvae. This is a very common helminth infection in the Malayan mouse deer.

Giemsa-stained preparations of sporozoites *P. traguli*, *Plasmodium* sp. (from Malayan chickens) and the tentatively identified parasite from *Mansonia crassipes* were demonstrated.

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DR. DOUGLAS E. MOORHOUSE
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Enchanced damage to attap roofs by the caterpillars of **Herculia nigrivitta,** following house-spraying with DDT

In March 1961 house-spraying with a DDT emulsion was started in the area of the malaria eradication pilot project in a part of the State of Selangor. It was designed to give a deposit of two grammes technical DDT on all sprayable surfaces. These were defined as the internal walls and roofs of the houses, (to a height of at least ten feet), the backs and undersides of all pieces of furniture; and where the house was raised on stilts, the underfloor area. Outside porches and the eaves were also sprayed, as were adjoining animal shelters. Since the start spraying has been repeated at six-monthly intervals. Five cycles have now been completed (December 1963). After the second cycle of spraying was finished, (June 1962) complaints were received that one result of the spraying was that the attap roofs of many houses were rapidly being destroyed by caterpillars. Field investigations confirmed that this was the case.

Attap the common thatch of rural Malayan houses, is made from the fronds of either the sago palm (*Metroxylon sagus*), or the fronds of *Nippah fruticans*, a brackish-water palm specially cultivated for thatching purposes. The normal life of such a thatched roof is from three to seven years, depending upon the way in which the attap is laid, whether it has been soaked in running water before being used, and whether it is made from the nipah or the sago palm; sago lasted the longest but is more expensive. Reliable evidence was produced that after DDT spraying roofs less than one year old were in holes and were ruined. This has been confirmed by subsequent observations.

The caterpillar responsible for the damage was identified as that of *Herculia nigrivita*, Walker, a small blackish-brown moth. This caterpillar is a well-known pest of attap in Malaya, but usually it is present in small numbers and the damage caused is small when compared with the normal rotting processess which take place in the attap. Most of the house-holders readily admitted that the caterpillar was present in their roofs before the start of spraying. Damage after spraying was found to be most severe in outside porches, the eaves, and other unenclosed places. It was moderately severe in smoke-free living rooms, and was minimal in kitchens where open fires were used.

Caterpillars taken from the attaps were found to be resistant to DDT. Forty were exposed to 4% DDT susceptibility test papers for one hour, and were then placed in gauze-covered jars and fed on DDT-sprayed attap for ten days. There was no mortality. They were found to be moderately susceptible to both BHC and dieldrin. Cheng (1963) has recently reported this same problem of increased damage after spraying from North Borneo, but he has evidence that DDT avoidance plays a part in Borneo. There is no such evidence from Malaya, and the caterpillar will readily feed on DDT-sprayed attap.

Examination of the remains of pupal cases of *Herculia nigrivitta* from old attap shows that many of them were parasitised. There is every reason to suppose that in Malaya, as in North Borneo (Cheng, 1963), this pest is naturally kept under a biological control by a hymenopterous parasite (*Antrocephalus* sp.), but that the controlling mechanism is susceptible to DDT whilst the caterpillar is resistant. Examination of both caterpillars and pupae from the sprayed area after the start of spraying has not shown the presence of the parasite.

Damage is not uniformly distributed over the whole sprayed area, but is concentrated into

certain areas. The reasons for which are not known. For survey purposes the area of the pilot project was divided into rectangles each of $8\frac{3}{4}$ square miles. During the fifth cycle of spraying operations 455 house-owners refused to allow the attap to be sprayed because of the damage; just over 60% of these refusals took place in four of the above-mentioned rectangles, probably about one-tenth of the inhabited area. Dieldrin was sprayed on the attap in one area where damage was intense (400 mgs/m^2) in an attempt to effect control. It reduced damage but did not provide a satisfactory answer to the problem.

It seems that this problem may interfere with any prolonged house-spraying campaign using DDT, and that it could well jeopardise any programme which demands a one hundred per cent total house coverage.

Demonstrations showed the caterpillars and adults of *Herculia nigrivitta* and specimens of damaged attap and photographs of huts affected from DDT-sprayed areas.

REFERENCE

Cheng, F. Y. (1963). Deterioration of thatch roofs by moth larvae after house spraying in the course of a malaria eradication programme in North Borneo. **Bull. Wld. Hlth. Ord., 28,** 136-7.

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MR. W. H. CHEONG and MR. A. GANAPATHIPILLAI
(Division of Entomology, IMR, Kuala Lumpur)

Preliminary observations on the aquatic stages of **Toxorhynchites** (Diptera : Culicidae) in Malaya

Mosquitoes of the genus *Toxorhynchites* have predatory larvae, and typically breed in tree holes or small containers. This makes them of great interest as potential agents of control in areas where they co-exist in such sites with larvae of mosquitoes or insects of medical importance.

As an example *T. splendens*, occurs very commonly in coastal areas of Malaya in Nipah palm bases and artificial containers. In Nipah palm bases at Rantau Panjang *Anopheles hackeri* also breed. The predacious larvae of *T. splendens* no doubt reduce the breeding of *A. hackeri* in this area. *A. hackeri* is an important vector of simian malaria in Malaya. Further evidence was obtained during our *Aedes aegypti* surveys when *Toxorhynchites* were taken from artificial containers in which *Aedes aegypti* and *A. albopictus* also breed.

In Malaya, ten known species of *Toxrhynchites* occur. The present study has been confined to the typical hill forest types from Ulu Gombak and Ulu Langat: *Toxorhynchites metallicus* and *T. magnificus*. They are regularly encountered breeding in living and split bamboos and in other natural containers rather like *T. brevipalpis* in Africa (Corbet, 1963).

The *Toxorhynchites* in Ulu Gombak live in association with two species of *Anopheles; A. asiaticus* in fallen split bamboos and *A. boniae* in living bamboos. Also found in this same association are at least six other genera of *Culicidae* namely *Tripteroides, Topomyia, Orthopodomyia, Aedes* (*Finlaya*), *Armigeras* (*Leicesteria*) and *Culex* (*Lophoceratomyia*). In the twenty larvae collected, all the four intars were included. These were placed in individual bowls and feeding habits were observed daily. The larvae of other mosquitoes were used in feeding them.

The main points of interest are as follows:-

1. The period from 1st instar to final emergence is between 21 and 24 days, of which the 1st instar takes two to three days, the 2nd and 3rd instar each taking three to four days, the fourth instar ten days, and the pupal stage to emergence between five and seven days.

2. It was found that during development, roughly 1, 2, 3 and 15 mosquitoe larvae were eaten per day by each of the 1st, 3rd and 4th instars.

3. Larvae were only killed for food by the 1st, 2nd and 3rd instars whereas the 4th instar not only ate numerous larvae during its ten day developmental period but also killed large numbers and left them uneaten. This was specially true during the last four days before pupation.

REFERENCE

Corbet, P. S. (1963). Observations on **Toxorhychites brevipalpis conradti** crunb. (Diptera: Culicidae) in Uganda. **Bull. ent. Res.** Vol. 54, Pt. I.

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(U.S.P.H.S., Far East Research Project, IMR, Kuala Lumpur)

and

DR. DAVID W. ELLISON
(U.S. Army Medical Research Unit, IMR, Kuala Lumpur)

Chrysomia bezziana, a major hazard at the Malayan National Zoo

On December 17, 1963, a report was received from the Malayan National Zoo that one of the camels was suffering from an infected eye. On investigation, the orbit and lids were found to be greatly swollen and inflamed. Many second and third instars of a calliphorid were seen in and about the orbital tissue. Many muscids, calliphorids and sarcorphagids were seen feeding on the discharge from the orbit. A solution of approximately 7% chloroform-93% castor oil was applied to the area and the animal re-examined the following day. At this time, 10 dead larvae and nine living third instars were removed. The latter were allowed to pupate, pupation occurring on December 19 and 20. On December 27, five adult flies emerged, four adults emerging the following day. All adults proved to be *Chrysomia bezziana,* reported by Chandler and others as the most important myiasis-producing calliphorid of the South-East Asia region. The eye of the camel responded well to local treatment with an antibiotic powder, following the removal of the screwworms.

On December 28, a Ceylonese hog deer with a badly cut foot was examined. Several maggots were seen deep in the wound. During the examination and curetting of the wound on the second day, a large mass of calliphorid eggs were seen on the hoof near the wound. Ten to fifteen adult *C. bezziana* were attracted to the wound and blood from it during the examination. On January 4, 1964, the badly cut right forefoot of a wallabie was found to contain 14-16 second instar screwworms.

Routine inspection of the zoo premises revealed the presence of adults of *C. bezziana* in the kitchens, veterinary block, monkey cages, carnivore cages, many of the bird cages and the camel enclosures. The presence of this fly in such numbers about the grounds of the zoo emphasizes the fact that all cuts and abrasions suffered by the animals must be treated promptly to obviate further complications by myiasis. In addition, rigorous measures must be adopted to dispose of all rotting meat and offal that serve as attractants to the adult flies.

Adults and larvae of *C. bezziana* from the orbit of the camel were demonstrated.

REFERENCE

Chandler, A. C. **Introduction to Parasitology,** 9th New York: John Wiley and Sons. 1955.

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MR. W. T. CHELLAPPAH
(Dept. of Parasitology, University of Singapore)

Observations on Delayed Mating and Post-coital Impotence of Spermatozoa in **Aedes albopictus (Skuse) (Diptera : Culicidae)**

There is a lapse of time between mating and fertilizing of eggs in *Aedes albopictus*. Experiments were designed to determine the period of time that must first elapse before fertilization could take place.

Three cages were set up: Cage A females only; cage B males only; Cage C males and females together. All cages were maintained on honey and water unit the fifth day when cages A and C were offered a blood meal; unfed mosquitoes were removed. At 48 hrs (or more) after the blood meal, single females from cage A were exposed to approximately 50 males in cage B (these are referred to hereafter as "test females"). Mating took place almost immediately. The mated females were separated and maintained in 3" x 1" tubes and in each case matched with another female from cage C, set up in a similar tube as a control. The controls differed only in the time at which insemination occurred and probably to some extent in the number of inseminations received.

At various period after mating, so arranged that the period after blood meal was roughly the same in each case, oviposition was induced in the paired mosquitoes by de-alation under light anaesthesia. Batches of eggs were thus obtained which were laid at known periods after experimental mating, in each case matched with a batch from normally-mated control. When laying ceased, all females were dissected and the spemathecae examined for spermatozoa; where spermatozoa were absent or scanty, the test was discarded. At the same time, unlaid eggs were counted.

The eggs laid by each female were then transferred to individual slips of filter paper, counted and kept moist for 48 hrs. After this conditioning period, they were dried for 48 hrs and then placed in grass infusion, whereupon hatching usually took place almost immediately. At the end of 10-12 hrs, the hatched larvae were counted and a further check was made after 24 hrs in case of delayed hatching. Table I shows the mean number of eggs per female laid and retained, together with the total numbers developed and the proportions actually laid. These were grouped according to the periods which elapsed between mating and oviposition in the test mosquitoes. In all groups, the total number of eggs developed was less in the test mosquitoes than in the controls and in all but one group, the percentage of eggs actually laid was also lower. Statistical analysis shows both differences to be highly significant, $P < 0.01$.

Table I shows the hatching rates of eggs laid by single test mosquitoes, and in table II these are grouped according to the period between mating and oviposition and compared with the controls. It is clear that there was no fertilization of eggs which were laid less than seven hours after mating and very little before eight hours, after which there was a rapid increase in the proportion fertilized.

The apparent impotence of the spermatozoa during the period of the first eight hours after mating is clearly not due to any delay in their migration to the spermathecae. Spermatozoa were seen to be filling the spermathecae in as little as two minutes after mating. It would appear either that the spermatozoa require a period of maturation inside the spermathecae (perhaps a form of "acclimatisation") or that some hormone, essential to the act of fertilization is produced some hours after the stimulus of filing of the spermathecae.

TABLE I

Mean numbers of eggs/mosquito developed, laid and retained

Experimental Period*	No. of Mosquitoes	Test mosquitoes				Control			
		Eggs laid	Eggs retained	Eggs developed	% Eggs laid	Eggs laid	Eggs retained	Eggs developed	% Eggs laid
up to 6 hrs.	22	55	44	99	56	76	31	107	71
6 - 8 hrs.	8	51	35	86	59	84	23	107	79
8 - 10 hrs.	6	57	20	77	74	65	31	96	68
10 - 12 hrs.	6	55	31	86	64	85	21	106	80
Over 12 hrs.	10	53	40	93	57	86	18	104	83
TOTAL:	52	54	38	92	59	79	26	105	75

* Period elapsed between mating and oviposition

TABLE II

Hatching rates in eggs laid (mosquitoes tested singly)

Experimental period	No. of Mosquitoes	Test mosquitoes			Controls		
		Eggs laid	Eggs hatched	% eggs hatched	Eggs laid	Eggs hatched	% eggs hatched
up to 6 hrs.	22	1218	0	0	1677	1287	77
6 - 8 hrs.	8	405	34	8	675	561	83
8 - 10 hrs.	6	343	37	11	392	269	69
10 - 12 hrs.	6	332	146	44	509	431	85
over 12 hrs.	10	530	265	50	862	718	83

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MR. W. H. CHEONG
(Division of Entomology, IMR, Kuala Lumpur)

Confirmation of DDT and Dieldrin Resistance and malathion sensitivity in **Cimex hemipterus**

From time to time reports have been received from various parts of Malaysia that bed-bugs were resistant to insecticides in use. These insecticides were DDT, BHC and Dieldrin. Following these complaints, Reid[1] carried out a laboratory investigation on one strain of the reported resistant bugs collected from a tea-estate on the coast of Selangor on which BHC and Dieldrin have been officially used, the most recent of which was dieldrin. The test insecticide was malathion, an organophosphorus compound, which had given good results against mosquitoes previously. (Reid and Chee[2]). The bugs were reared in the laboratory and fed on guinea-pigs until there were sufficient adults for testing by the method based on Busvine[3]. Reid found that the bugs were highly resistant to dieldrin and young hatched out during the test survived; in tubes containing malathion, except the control, they died. There was also a marked tolerance for DDT.

Following complaints from a labourers' quarters in the Kuala Lumpur area where DDT has been sprayed irregularly, the last occasion being a few months prior to complaints, a test was carried out. The tenants were either Malays or Indians. There were two blocks of ten houses each and another of four houses. Nineteen of these houses were inspected and bugs were collected from eleven of them. The test method was exactly the same as that of Reid[1] based on Busvine[3]; that is, using test-tubes with ready-prepared W.H.O. test papers for DDT and dieldrin and malathion paper prepared here. The papers 2 cm x 5 cm were folded once lengthwise.

The bugs were fed 48 hours before the test. The test was carried out on an exposure of 120 hours (5 days) at normal room temperatures with daily records of numbers dead. The tables show the results recorded with that of Reid.

TABLE I. TEA ESTATE

Test Paper	%	No. of bugs dead after 5 days
Control	0%	0/30
DDT	4%	10/20
DDT	8%	18/20
Dieldrin	1.6%	1/20
Malathion	0.01%	6/25
Malathion	0.02%	21/25
Malathion	0.05%	25/25
Malathion	0.1%	15/15

TABLE II. KUALA LUMPUR

Test Paper	%	Number of bugs dead after 5 days	8 days	12 days
Control	0%	1/15	1/15	1/15
DDT	4%	4/15	6/15	11/15
DDT	8%	2/15	6/15	12/15
Dieldrin	0.8%	2/15	6/15	7/15
Dieldrin	1.6%	2/15	6/15	9/15
Malathion	0.01%	10/15	13/15	15/15
Malathion	0.02%	14/15	15/15	15/15
Malathion	0.05%	15/15	15/15	15/15
Malathion	0.1%	15/15	15/15	15/15

At a glance both tables show fairly similar results except for minor differences. There was a definite resistance to both DDT and dieldrin in the Kuala Lumpur strain for Busvine gives a normal LD50 of dieldrin for *C. lectularius* at 0.07% and of DDT at 1.2%. With 1.6% dieldrin 26.7% of the bugs were killed in five days and with half the amount (0.8%) dieldrin, 13.3% mortality was recorded. Even after

twelve days of exposure, 60% and 46.7% had been killed respectively for the two concentrations.

The next insecticide DDT at 8% concentration gave a kill of 13.3% and at 4% concentration a kill of 26.7%. These clearly showed resistance and it was observed that the newly hatched bugs survived through from the seventh to the twelfth day. The Kuala Lumpur bugs seem to be more sensitive than the tea-estate bugs to malathion; the LD50 being slightly less than 0.01% whereas that of the tea-estate was slightly more than 0.01%. By the twelfth day all bugs in contact with malathion were dead.

It would appear that *Cimex hemipterus* readily acquires resistance to DDT and dieldrin in places where these are used in Malaysia. The experience of the Malaria Pilot Eradication Project at Kuala Selangor where this insecticide is used is a good example. It would therefore be important that steps should be taken to solve the problem which could do a lot of harm in any major campaign.

REFERENCES:

Reid, J. A. (1960). **Bull. Wld. Hlth. Org., 22,** 586-87.

Reid J. A. and Chee S. L. (1959). **Med. J. Malaya, 13**, 239-42.

Busvine, J. R. (1958). **Bull. Wld. Hlth. Org., 19,** 1041-52.

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DR. DAVID W. ELLISON and COL. HINTON J. BAKER
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Pseudomonas pseudomallei from the Gombak River

The presence of melioidosis in Malaya has been known since 1913. Most instances of recorded isolations of *Ps. pseudomallei* in this country have been from either infected animals or man. Clinically, this disease is rare, easily confused with other maladies, and quite often fatal with the primary gross lesions being those of multiple abcesses in the lungs, liver, and spleen. Many of the survivors in whom this disease has been diagnosed exhibit draining suppurative lesions, abcesssed lymph nodes or swollen joints. The organism has been isolated from nature in other countries. Having been found in stagnant water, ponds, and rice swamps in Vietnam, melioidosis was described as "hydrotelluric" disease. An excellent review of the work done on the natural occurence of the organism in nature by several French workers in Vietnam has been presented by Rubin.

By using hamster inoculation techniques developed by this laboratory and standard cultural procedures, seven isolates were recovered from water samples and susequently confirmed as being *Ps. pseudomallei* by the Walter Reed Army Institute of Research in Washington, D.C. All isolates were recovered from flowing water from five different sites on two different days. One isolate was obtained from the first site, a jungle stream 16 miles from Kuala Lumpur that flows into the Gombak River. Another isolate came from the main river about 7 miles from town. Two isolates were made from a branch of the main river 6¾ miles from town just before it enters some rice fields. Three other isolates came from the effluent of the some water after it had flowed through the rice fields some 6 miles from town.

Subsequent isolates, though not yet confirmed, indicate further contamination of these same sites plus certain stagnant pools of water around the Kuala Lumpur area.

Further investigations will be conducted to try to determine the sources of the contamination.

In view of the fact that this organism is found in the waters frequented by man and animals, both veterinary and medical officers should certainly consider this disease when trying to make a diagnosis and should stress to their contacts the importance of utilizing a sanitary water supply.

Cultures of *Ps. pseudomallei* on differential media were demonstrated.

REFERENCES:

Joubert, L. and Phung Van Dan (1958). Epidemiology and prophylaxis of melioidosis in man and animals in the tropics, **Rev. Elev.** 11, 23-29.

Lee Chin Hua (1961). A Note on melioidosis in a serow in Perak, **Malayan Vet. Med. Assn.,** volume III No. 2.

Omar, R.A., Cheah Kok Kheong, and Mahendranathan, T. (1962). Observations on porcine melioidosis in Malaya, **Brit. Vet. J. 118,** 421.

Retnasabapathy, A. (1959). Melioidosis in pigs, **Malayan Vet. Med. Assn.,** volume II, No. 3.

Rubin, H. L.; Alexander, A. D.; and Yager, R. H. (1963). Melioidosis — A military medical problem? **Military Medicine,** vol. 128, No. 6.

Shanta, C. S. (1960). A note on the isolation of **Pf. whitmori** from the large intestines of a goat, **Malayan Vet. Med. Assn.,** volume III, No. 1.

Stanton, A. T. and Fletcher, W. (1932). **Melioidosis,** Studies of I.M.R. No. 21.

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MR. CHARLES F. NEEDY
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The Indirect Fluorescent Antibody Technique in Scrub Typhus Studies

Indirect FA staining (1) as used in this laboratory is modified Coombs type of reaction in which the binding of unlabeled antibody to antigen is visualized by means of a second stage "FA indicator rather than by "second stage" serologic reactions such as agglutination. The indirect test allows the investigator to determine either the anitbody level of an unknown serum or the identity of an unknown antigen. (2) The FA technique as employed by Goldman (3) in 1954 suggested the potential application in other fields. The usefullness of this tool as a rapid diagnosis of scrub typhus (4) is hereby described.

METHODS AND MATERIALS

(a) Impression smears of mouse peritoneum infected with the Karp strain of R. orientalis (Scrub typhus) were air dried, fixed 10 min. in acetone, air dried and stored at-65° C. These smears can be held at least 3 months at this temperature and are considered as the antigen source.

(b) Three areas of the infected smear are ringed with finegrnail polish, the first area designated the test smear: the second and the third are used as negative and positive controls, respectively.

(c) The test smear is covered with undiluted, unknown serum from the patient whose antibody is being tested. The negative control smear is covered with undiluted, known negative serum. The positive control is covered with undiluted, known positive serum.

(d) Slides are incubated for 30 min. in a moist chamber (plastic slide box lined with wet filter paper) at 37° C.

(e) Slides are rinsed two times for 5 min. each with phosphate buffered saline pH 7.2 followed by a quick rinse in distilled water.

(f) Slides are air dried (cool) by means of a hair dryer.

(g) All smears are covered with Fluorescein Isothiocyanate labeled anti-human globulin (horse origin).

(h) Step d, e, and f are repeated.

(i) Slides are mounted in buffered-glycerol saline and examined.

Approximate time involved to label product is ca. two and one half hours.

Slides are examined at a total magnification of X 516 with a fluorescence microscope equipped with a high-pressure mercury-vapour lamp and dark-ground condenser of a numerical aperature 0.80. Excitation with blue fluorescence (i.e. U.V. + blue) was provided by a Leitz BG 12 primary filter and a blue absorbing filter was placed in the ocular.

DISCUSSION

Fluorescence indicates the presence of homologous antibody in the test serum. Unlabeled antibody (i.e., human serum) plays a dual role, acting as: (A) antibody in the primary reaction (step c) and, (B) antigen in the secondary reaction (step g). (2) In 20 sera, all negative for OX-K antibody using the Weil-Felix Reaction, 6 proved positive by this method.

REFERENCES:

Weller, T. H., and Coons, A. H. (1954). Flourescent antibody studies with agents of varicella and herpes zoster propagated in vitro. **Proc. Soc. exp. Biol. Med. 86:** 789-794.

Cherry, W. B., Goldman, M., Carski, T. R. and Moody, M. D. (1960). Fluorescent antibody techniques in the diagnosis of communicable diseases. **U.S. Pub. Hlth. Service Publication,** No. 729.

Goldman, M. (1954). Use of fluorescein-tagged antibody to identify cultures of Endamoeba histolytica and Endamoeba coli. **Amer. J. Hyg. 59:** 318-325.

Bozeman, F. M. and Elisberg, B. L. (1963). Serological diagnosis of scrub typhus by indirect immunofluorescense. **Proc. Soc. exp. Biol. Med. 112:** 568-573.

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LABORATORY MEETING

held under the auspices of the ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE on January 10, 1964 at the INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR

DR. DORA TAN
(Division of Virus Research and Medical Zoology, IMR., Kuala Lumpur)

Sellers' Technique
A rapid microscopical examination for Negri bodies in the diagnosis of rabies

In the Laboratory diagnosis of rabies it is important that the techniques employed should be accurate, fast and economical. The method employing the microscopical examination for Negri bodies, using the simple application of brain tissue to a slide and Sellers' technique for staining, has been proved to fulfil these requirements. During the recent outbreak of rabies in Malaya, much was owed to this technique for the prompt and effective control of the spread of the disease throughout the country.

As it has been found that Negri bodies, when present, are most readily demonstarted in Ammon's horn (hippocampus major) of the brain and also in the pyramidal cells of the cerebral cortex and Purkinje's cells of the cerebellum, these portions of the brain tissue are usually examined.

Three methods of applying fresh brain tissue to slides are recommended: impression method, "roling" method and smear method. We prefer the last one as in this technique there is a copious concentration of tissue and a rather extensive area for examination.

Sellers' stain shows the Negri body well-differentiated in magenta to bright red, with well-demonstrated dark-blue to black basophilic inner bodies. All parts of the nerve cell stain blue, and the interstitial tissue stains pink. Erythrocytes stain copper-colour (orange-tinged red) and can be easily differentiated from the magenta-tinged red of the Negri bodies.

The best results with the stain are obtained when the brain tissue is fresh. As decomposition sets in, the characteristic colour differentiation is affected and although the Negri bodies retain their staining quality, the smear as a whole becomes too red, or at times too blue, and identification of the bodies becomes more difficult.

THE NEGRI BODY

Although generally rounded in form, the Negri body may be found to assume any shape. It has been demonstrated to be round, oval, spheroid, amoeboid, elongate, triangular, etc. There is also great variation in size; generally it is found within the limits of 0.24u to 27.0u. It is characteristically acidophilic in staining reaction, and takes on the pink to purplish-pink colour in differential stains which use basic fuchsin or eosin with methylene blue as their base.

The position of the Negri body within the neuron is intracytoplasmic. However, this position can be expected only in histological sections of the brain. In the simple tissue-application techniques described above, the histological pattern is disturbed and one may very often see well-formed Negri bodies which appear to be entirely outside the neuron.

The most characteristic feature of the Negri body is its internal structure. It is this feature which serves as the most essential criterion for positive identification. The matrix of the Negri body has an acidophilic staining reaction, and contained within this magenta-red structure are small inner bodies (Inner-körperchen), basophilic granules which stain dark-blue to black. The size of these inner granules generally varies from 0.2u to 0.5u. Classically, the well-formed Negri body — the so-called

text-book picture — will have its inner granules arranged in rosette fashion, with one large centrally-placed body and a series of smaller granules arranged neatly around the periphery of the Negri body. However, this picture is the exception rather than the rule, and it is very rare indeed that such an orderly arrangement of the inner granules is seen.

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DR. NYVEN J. MARCHETTE
(University of California International Center, for Medical Research, IMR, Kuala Lumpur)

Gal Filtration

Gel filtration is a simple method for separating water soluble materials differing in molecular size. In practice the filtration is done through a bed of packed grains of an inert hydrophilic material whose long carbon chains are cross-linked to form an open mesh-like structure.

The gel column on display was prepared from a granular dextran (Sephadex G-25 (R)) with a moderate degree of cross-linkage giving a gel of medium porosity when suspended in aqueous solution. Each dextran grain is a three-dimensional network of cross-linked polysaccharide chains. They are insoluble in ordinary aqueous solutions and are strongly hydrophilic. When placed in water, the grains swell forming gel grains; the degree of swelling being determined by the degree of cross-linking of the polysaccharide chains. The degree of cross-linking in the dextran grains also determines the size of the molecules which can diffuse into the gel grain. Solutes of sufficinetly low molecular size can diffuse relatively freely through the network structure in the grains, but large molecules are completely excluded. Thus it is readily seen how water soluble substances of large molecular size can be separated from solutes of small molecular size.

A useful application of gel filtration is in the purification of serum globulins after fractionation from whole serum with ammonium sulfate. The ammonium sulfate can be removed by dialysis against distilled water or a buffer, but this may take hours or days. It can be accomplished much more rapidly by gel filtration. In the latter method, the small ammonium sulfate molecules readily diffuse into the gel grains, but the large globulin molecules are completely excluded and flow through the aqueous matrix existing between the gel grains, and are collected at the bottom of the column. After all the pure globulin has come off the column, the ammonium sulfate molecules can be "flushed" from the gel grains with an excess of distilled water, saline or buffer and the column is speedily regenerated and ready for reuse.

Other applications of gel filtration are:

- separation and purification of enzymes and cofactors
- concentrating solutes of high molecular weight
- purification of haptoglobin
- purification of allergens
- separation of fluorescent antisera and unconjugated dye.

(R) Sephadex is the trade mark of Pharmacia, Uppsala, Sweden.

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DR. NYVEN J. MARCHETTE
(University of California International Center, for Medical Research, IMR, Kuala Lumpur)

Semi-micro complement fixation test

The development of semi-micro serological methods has made it possible to conduct extensive serological surveys which would be technically or economically impractical using conventional macroserological methods. The micro titer kit is one of the gadgets developed to make efficient use of some of these methods. Extensive use for over five years in hundreds of laboratories has shown it to be quite reliable and to produce results which are comparable to those obtained by conventional macro-methods. The major advantage of using this instrument is the great economy of time and materials which can be realized without sacrificing accuracy and reliability.

The micro-titer kit on display here has been in almost constant use for over a year in the IMR Virus laboratory. Approximately 12,000 complement fixation tests for rickettsial antibody have been conducted requiring approximately 120 ml of CF antigens. If the conventional CF tube test had been done, 10 times that amount (or 1,200 ml) of antigen would have been required for the same number of tests. The saving in antigen alone is considerable. Of even greater importance, however, is the small amount of serum required for semi-micro serological tests. A minimum of three CF tests can be run on 0.1 ml of serum.

In practice the entire complement fixation test is conducted on a semi-micro scale using this kit. The preliminary hemolysin and complement titrations as well as all the controls and the serum anti-body titrations are done in the microtiter plates. The amounts of serum and reagents used are: diluent- 0.025 ml; serum- 0.025 ml; antigen- 0.025 ml; complement- 0.050 ml; haemolysin- 0.025 ml; sheep red blood cells- 0.025 ml.

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DR. JAMES CHIN
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Haptoglobin and Transferrin Studies in Malaysia

During the last two years, genetic surveys have been conducted from the IMR, Kuala Lumpur, in selected population groups of Malaysia. The objectives of these surveys are to establish baseline frequencies for several genetic factors in the different groups under study and to attempt correlation of some of these genetic factors to disease entities. One study currently in progress is a Haptoglobin (Hp) and Transferrin (Tf) survey of different racial groups in Malaysia. Since the initial publications of Smithies establishing the genetics of these serum proteins, great attention has been focused on them.

The method employed to study these genetically controlled serum factors is starch gel electrophoresis. This method for the separation of protein fractions essentially depend on the combination of electrophoresis and ultrafiltration (the gel as the supporting medium also serves as a fine mesh filter). For the detection of Haptoglobins in starch gel, use is made of their physiological function. After in vivo hemolysis every effort is made to conserve the body's iron supplies, and one of the mechanisms is through the complexing of free hemoglobin with circulating Haptoglobin (the 2-globulin). Prior to electro-phoresis of serum for Hp and Tf determination, free hemoglobin is added to the serum in vitro, in sufficient amount to saturate the hemaglobin binding capacity of the Haptoglobins. After electrophoresis, the gel is sliced in half and one of the halves is stained with a benzidine reagent to detect the peroxidase activity of the Haptoglobin-hemoglobin complex.

Four main Haptoglobin types have been identified by starch gel electrophoresis of serum, according to the number of molecules of hemoglobin bound and the mobility of the Hp-Hemoglobin complexes. They are referred to as Hp 1-1, Hp 2-2, Hp 2-1, and Hp 0-0. These Hp types are controlled by a pair of alleles; the Hp 1 gene and the Hp 2 gene (the 0-0 type has not definitely been proven to be genetically controlled).

The work of Kirk et al. (1960) demonstrated the frequency of the Hp 1 gene to be 0.24 in Malayan Malays. The present survey of Hp types in Malaysia seem to support this general frequency for Malayan Malays, but of interest is that Malays from Brunei have a significantly higher frequency of the Hp 1 gene. The reason for this difference is not immediately evident.

Transferrins, the other genetically controlled serum protein under study also has a very important physiological function. It is the iron-binding protein which transports iron to the iron stores and to the marrow. At present, there appears to be at least a dozen autosomal genes occupying a single locus on homologous chromosomes. By far the most common Transferrin gene is Tf^c, and most people are homologous for this gene. The other Transferrin types are named in accordance with their mobility rate in starch gel. Thus, those that migrate faster than Transferrin C are called B1, B2, etc., and those that migrate less rapidly are called D1 etc. Transferrins can be identified on the same gel that is used for Haptoglobin determination. After electrophoresis, half of the gel is stained for Haptoglobin and the other half is stained for general proteins. The pattern of the Transferrins can then be seen as the B1-globulin, between the Hp 1 band and the free excess hemoglobin.

Work with Transferrin identification in Malaya has just started and not much can be reported at this time except that Transferrin types other than C, probably subtypes of D are present in Brunei Malays.

REFERENCES

Smithies, O. (1955). Zone Electrophoresis in Starch Gel. **Biochem. J.**, 61:629.

Kirk, R. L., Lai, Y. Y. C., Mahmood, S., and Singh, R. B. (1960). Haptoglobin Types in S. E. Asia. **Nature, Lond.**, 185:185.

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DR. LIE-INJO LUAN ENG
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Alkaline phosphatase Activity in Leucocytes of Animals

The study of the enzyme alkaline phosphatase in neutrophilic leucocytes has become a useful tool in differential diagnosis in clinical medicine. The activity is increased in different conditions such as certain infections, malignancy and pregnancy. It is decreased in leukaemia. Especially in the tropics where concealed infections are prevalent, this study is expected to be a valuable aid.

Kaplow (1955) described a histo-chemical method for demonstrating this activity in the plasma of neutrophilic leucocytes. By this staining method a cell with enzyme activity is stained brown. The greater the enzyme activity, the darker the staining of the plasma. The activity is rated in every cell as 1+, 2+, 3+ and 4+. When 100 cells are counted the total number of the ratings is called the score.

Lie-Injo and Govindasamy found in 53 normal healthy Malayans a mean score of 19.3 with a range of 3 to 65, while in 116 newborns and 240 young infants below 1 year they found the activity to be physiologically much increased. With this procedure, it is essential to stain a positive control along with the unknown and it has always been a problem to find a positive control. We have examined different species of laboratory animals in the hope of finding species with a physiologically constant and definite increase of alkaline phosphatase activity in the neutrophilic leucocytes. It was found that normal heathy adult guineapigs and hamsters have a very high alkaline phosphatase activity in the leucocytes (slide 1). The score in 20 hamsters and 20 guineapigs was found to be above 200 in everyone of them. The leucocytes of mice however, are devoid of alkaline phosphatase activity (slide 2). Also in adult rabbits and rats the activity is increased when compared with normal healthy persons. With this finding the problem of having available positive controls in the laboratory is solved. While blood of hamsters and guineapigs can serve as a positive control, that of mice can be used as a negative control. Of more fundamental importance is, of course, the demonstration herewith that the metabolism involving the enzyme alkaline phosphatase is different in different animals.

REFERENCE

Kaplow, L. S. (1955). **Blood**, 10, 1023.

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DR. ANTHONY BALFOUR
(Pathologist, Royal Air Force Hospital, Changi, Singapore)

and

DR. IVAN POLUNIN
(Reader, Department of Social Medicine and Public Health
University of Singapore)

Some Haematological Data from a Laotian Village

The Village of Ban Na Khoun Noi lies about twelve miles north-east of the capital of Laos, Vientiane; it appears slightly more prosperous than most Lao villages, and is probably affected by the nearness of the capital. The people are Lao (Laotians), a race similar to the Thai. Their staple food is glutinous rice. There is not a great deal of animal food to be had, but mammals, birds, reptiles, amphibia and insects of many species are eaten; and also leaves, roots, fruits, and seeds of many species of wild, semi-wild and cultivated plants, but not in very great quantities. The climate is monsoonal, with well defined wet and dry seasons.

Specimens of venous blood were taken from the twenty-three adult villagers willing to be bled on the first of a series of visits, citrated, and kept on ice. The tests were done seventy-two hours after the samples were taken instead of the expected twenty-four hours, owing to unforseeable difficulties in transit. Most of the specimens appeared to be in good condition when tested in spite of the delay; but Nos. 5, 9, 10, 11, 12, 16 and 18 showed varying degrees of haemolysis, and there were some clots in Nos. 12 and 23. The results are given below in Table I; obviously worthless results have been omitted, and suspect figures are given in brackets. Comments on the findings are given in the next paragraphs.

Blood Groups

Group O	39%	(9 of 23 samples)
Group B	26%	(6 of 23 samples)
Group A	22%	(5 of 23 samples)
Group AB	13%	(3 of 23 samples)

Even in this small series, the B antigen is present in nearly 40% of the samples, emphasising its frequency in this part of the world.

Plasma Proteins (determined by the Copper Sulphate method) ranged from 6.2 to 7.2, with an average of 6.9 G/100 ml. Only No. 1 fell below the normal range given by Whitby (1963) of 6.6 to 8.1; and this range probably applies to Englishmen on a diet which is likely to be richer in protein.

Erythrocyte Sedimentation Rates (Wintrobe's method, corrected for packed cell volume) are unlikely to be reliable on such old samples; but 74% were within the normal range, 18% doubtful; and only 4% i.e. 1 sample — moderately increased and 4% markedly increased, namely samples 19 and 20.

Haemoglobins (oxyhaemoglobin method) Taking 11G/100ml as the lowest acceptable limit of nomality, 60% of the series were within normal limits, and another 25% were over 9.0 G/100ml but showed moderate anaemia; and only 15% showed marked anaemia. These three samples are being investigated further. No. 4 is probably a case of iron deficiency; but Nos. 14 and 15, who belong to the same household, are suspected of having haemoglobinopathies on clinical grounds. Electrophoresis is being done to see whether there may be a heterozygous HbE or Thalassaemia, or whether the Hb is in fact normal.

Total Leucocyte Counts were mostly on the low side, only 10% being over 5,000 cells/mm; some cells may have been destroyed in transit,

but it seems likely that these results indicate a tendency towards mild leucopaenia, as is common in these climates. Three results were eliminated as suspect; of the others, 70% were over 2,000, 15% between 1,500 and 1,000, and another 15% between 1,500 and 2,000.

Differential Leucocyte Counts were pretty well within normal limits except for Nos. 8 and 21, which showed a reversal of the normal polymorphonuclear-mononuclear ratio. Several showed tendencies towards eosinophilia, but only two samples, Nos. 2 and 18, had absolute eosinophil levels above 250; and the highest was only 380, of very doubtful significance.

Parasites. No filaria or malarial parasites were seen in searches of thick films, or on thin films during the differential leucocyte counts.

A full account of various investigations on these and other samples is to be presented later; meanwhile we hope that this preliminary communication giving the results available now may be of interest, because so little is known about the haematology of Lao villagers at present.

No.	Blood Group	Plasma Protein	E.S.R.	P.C.V.	MCHC	Hb G%	Hb %	WBC	Differential P	Differential L	Differential M	WBC E
1.	A	6.2	3	39	31	14.6	101	4000	49	42	4	5
2.	AB	6.9	10	(30)	—	15.4	107	2800	56	29	5	10
3.	A	6.9	8	35	36	12.6	86	2600	51	39	4	6
4.	B	6.9	5	30	29	8.6	59	6200	68	29	0	3
5.	B	6.6	3	38	34	12.9	89	3300	46	48	1	5
6.	O	7.2	2	39	39	15.2	105	1700	55	41	2	2
7.	O	6.9	2	27	35	9.4	64	5400	64	34	2	0
8.	O	7.0	1	33	35	11.7	81	4100	34	60	2	4
9.	O	7.0	1	38	35	13.2	91	3500	68	25	2	5
10.	B	6.9	2	42	33	13.7	95	4200	54	40	2	4
11.	B	6.9	1	35	39	13.7	99	1800	57	35	3	5
12.	A	6.9	2	—	—	—	—	—	67	37	1	1
13.	B	7.0	3	30	32	9.7	67	1000	56	43	1	0
14.	A	7.2	2	25	31	7.7	53	3200	59	40	0	1
15.	AB	6.9	2	23	35	8.0	55	2000	67	29	2	2
16.	O	6.8	0	(20)	—	13.7	95	3300	64	27	2	7
17.	O	6.9	10	30	31	9.4	64	1300	41	55	4	0
18.	AB	7.0	2	35	31	10.9	75	2700	50	36	0	14
19.	O	7.0	30	39	33	12.9	89	2800	53	36	3	8
20.	A	7.0	27	35	29	10.0	69	1500	66	31	1	2
21.	A	7.0	1	32	35	11.2	77	1400	41	59	0	0
22.	O	6.8	10	25	34	(8.6)	(59)	(850)	58	39	1	2
23.	O	—	—	—	—	(8.9)	(61)	(950)	—	—	—	—

REFERENCE

Whitby, L. E. H., (1963). **Disorders of the Blood,** 9th edition, p. 793, London: J. & A. Churchill Ltd.

ANOTHER SKIN TEXT-BOOK !

Bailliere, Tindall and Cox Limited have just started to publish the first four of the series of concise medical text books of which the volume entitled "Dermatology" (by R. B. M. MacKenna and E. L. Cohen) is claimed to provide a survey of the subject for the students and a handy guide to the newly qualified practitioner. With the rising tide of medical publications tending to overwhelm both students and shelves one is compelled to ask if such a book is needed. Knowing regretfully the standard of dermatological teaching throughout the world the answer must be yes, but it must be said, even more regretfully, that this is not the book. It is claimed by the publishers that tropical dermatology is dealt with "fairly thoroughly and the book will be useful in many countries" but the inadequate treatment of the subject defeats this aim.

In the section on Hansen's disease there is no mention of borderline leprosy nor any account of the spectrum of clinical disease being dependant on the host-parasite relationship, while the severe and difficult problem of erythema nodosum leprosum is not mentioned at all. It is unfortunate to advocate Gram's stain with a counterstain of methylene blue for the demonstration of M. leprae and not all leprologists would agree that ditophal (Etisul) is "very efficient." The section on Leishmaniasis does not refer to the lupoid variety which is now most common in Iran and other parts of the Middle East, while the 10 lines devoted to granuloma inguinale and lymphogranuloma inguinale will not help doctors in India.

Turning to straightforward dermatology most dermatologists would not agree that the so-called pyogenic granuloma should be included in a chapter devoted to Superficial Bacterial Diseases and it is hardly necessary to have a section on Besnier's Prurigo which is more than 80 pages away from Atopic Eczema. Another unwarranted divorce is the separation of malignant melanoma from cellular naevi by articles on Rodent Ulcer and Epitheliomata (the authors apparently do not subscribe to the view that Rodent Ulcer is an epithelioma). It is also doubted whether general physicians would fully accept the classification of treatment of purpura as proposed.

The total lack of photographs is explained by the desire to keep down the price but it is felt that a slightly more concise volume with some photographs would better have served the purpose for which the book was planned. The reviewer believes that this volume will not replace Borrie's recent edition of Roxburgh's Common Skin Diseases as the best simple summary of dermatology.

(Sd.) J. H. S. PETTIT

BOOK REVIEW

"Psychiatry" by E. W. Anderson, Concise Medical Textbooks, Bailliere Tindall & Cox, London, 1964, pp 296. 16s.

This is the first of a new series of "Concise Medical Textbooks," each on a different subject, which the publishers propose to bring out in place of their "Students Aids Series." Prof. E. W. Anderson, a noted authority in British psychiatry, was the co-author, with Prof. W. S. Dawson, of the predecessor of this volume, the "Aids to Psychiatry."

This book is in fact a modification of and an improvement on its predecessor of the "Aids" series. Although the layout of the book is largely the same, it is brought up-to-date and contains some new and useful chapters.

The descriptions of symptomatology in most chapters have been enlarged and improved upon. The discussions of theories and treatments have been brought up-to-date, notably in the chapters on Schizophrenia, Affective Illnesses and Mental Subnormality.

The chapter on Epilepsy, with minor modifications, is largely the same as in the "Aids." The subject of the schizophrenia — like psychosis of epilepsy which is currently topical in the journals and often important in psychiatric differential diagnosis is omitted completely. The various psychosomatic syndromes are mentioned but not discussed to any extent, making the whole section rather disjointed to the newcomer to psychiatry. Mention of the role of the emotions and the unconscious in the neuroses is cursory, and the psychodynamic theories, admittedly controversial, are barely touched upon. There is however a concise description of the philosophical schools of "Existential Analysis" of L. Biswanger and H. S. Sullivan.

There are new chapters not found in the "Aids." The chapter on "Drug Treatment in Psychiatry" is well written, concise yet comprehensive, and would provide a good guide to the student and the general practitioner who are often bewildered by the array of drugs and names which may be confusing. The discussion on the "Social Aspects of Psychiatry" gives a good survey of the scope of psychiatry in its non-medical aspects.

The chapter on Psychopathology defines and describes quite clearly such terms as "delusions," "hallucinations," "disorders of thinking," "disorders of emotion," etc., concepts which are basic in psychiatry yet often nebulous in the minds of students and practitioners.

Clear descriptions are provided of such subjects as the biochemistry and genetics of oligophrenia, electroplexy, psychopathy, and criminal responsibility. The description of the difference between "neurosis" and "psychosis" will be useful to the student.

On the whole the book is to be recommended to the audience to which it is directed, namely the undergraduates and general practitioners who have not the time to digest the standard tomes on the subject. Whereas the small print of the "Aids" sometimes makes for difficult reading, the format and the larger print of this new volume makes it much more readable.

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BOOK REVIEW

VENEREOLOGY FOR ALL

Every time a doctor reads through a medical journal, he probably glances at several book reviews, but the number of books he buys each year, is much less. The reviewer is occasionally — rarely, might unfortunately be a better word — faced with the problem of persuading his readers that the book under review should be on everyone's bookshelf. Such a book is "Venereal Diseases" by King and Nicol.

The publishers claim that the book aims to "help undergraduates, general practitioners and consultants to appreciate the full scope of the subject and the manner in which it impinges on many other specialities." The authors succeed admirably in all this and the reviewer is sure that all doctors in Malaya should own this book, especially as there are no consultant venereologists in the country and everyone must diagnose and treat cases of venereal disease without being able to refer them to a consultant for opinion. This book should ease the task. It is profusely illustrated with 164 admirable black-and-white pictures and 16 in colour and in addition to a detailed and easily readable 120 pages on syphilis (including chapters on neurosyphilis and congenital syphilis) and 50 pages covering the problem of gonorrhoea, there are well-illustrated chapters on Yaws, chancroid, lymphogranuloma venereum, granuloma inguinale, non-gonococcal urethritis, Reiter's Disease, Trichomonal infections, pinta and bejel, as well as a very useful section headed "Other Lesions of the genitalis."

The reviewer learnt a lot from this book and is certain that any practitioner would derive instruction and pleasure from its possession. It is whole-heartedly recommended.

JOHN H. S. PETTIT.

"VENEREAL DISEASES" by Ambrose KING and Claude NICOL, published by Cassell & Co. Ltd., London, 1964. (50 shillings).

BOOK REVIEW

CLINICAL TOXICOLOGY OF COMMERCIAL PRODUCTS

Acute Poisoning (Home and Farm)

By

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Published by Bailliere, Tindall and Cox, 7 & 8, Henrietta St., Covent Gowden, London W.C.2.
Second Edition 1963.

Chemical poisoning is one of the leading causes of morbidity and mortality in the advanced countries. As our country gets more industrialised and as more chemicals are introduced in the home and in the work place, we may have similar experience.

The purpose of this book is to help the physician in the diagnosis and treatment of acute poisoning. This book will be of great value to the private practitioner and the doctors in a hospital who have to treat cases of poisoning. However, to get the maximum benefit from the book, one should become familiar with the book and not leave it on the shelf for use at the time of an emergency. The book is divided into eight sections. Section I deals with First Aid and Emergency treatment. Section II is an alphabetical index of chemicals (which are the main ingredients in the commercial products) giving details about the degree of toxicity and cross references to more information in Sections III and IV. Section III gives toxicological data on 76 classes of compounds. Section IV deals with supportive treatment and problems in treating a case of acute poisoning. Section V is an alphabetical index of over 14,000 commercial products giving their trade names and the various ingredients in each of the products. Section VII gives the addresses of the manufacturers. Section VIII is a classification of poisons based on "Standard Nomenclature of Diseases and Operations" published by the McGraw Hill Book Co., Inc., New York, 1961. The authors should be congratulated for the tremendous amount of work that has gone into the preparation of a book of this nature. The list of references at the end of Section III is a comprehensive list and will be of much value to those who require further information on any particular toxic agent.

The book would be easier to use if the number of sections were reduced. The sections dealing with emergency treatment and supportive treatment could have been combined in one section. Gastric lavage is mentioned in the section on emergency treatment while external cardiac massage and artificial respiration are included in the section on supportive treatment. The section giving the names and addresses of manufacturers will be more useful to those in North America since practically all the manufacturers are either from the U.S.A. or Canada. If this book is aimed at physicians, it is not necessary to mention precautions like "Never use alcohol" for gastric lavage!

One of the difficulties in publishing a book of this type is that it has to be revised constantly and new editions have to be published at short intervals.

My general impression is that this is an excellent book and there will be a demand for books of this nature in Malaysia in the coming years.

A. MANOHARAN,
M.B.B.S., Dr.P.H.

THE NUTRITION SOCIETY

FORTHCOMING MEETINGS

Saturday, December 5, 1964

A meeting for the presentation of original communications will be held in London.

Titles of papers or demonstration, each with an abstract for circulation to members before the meeting not exceeding 400 words or the equivalent space in print, including tables, figures and references, should be sent to Dr. I. Macdonald, Department of Physiology, Guy's Hospital Medical School, London, S.E.1, by October 24, 1964.

An abstract must be prepared according to the directions to contributors published in the **Proceedings of the Nutrition Society.**

If a title only is received by the closing date, or if the abstract sent exceeds the space allowed, the communication or demonstration may be given, but only the title will be published in the Society's **Proceedings.**

OTHER MEETINGS

Oils and Fats Group, Society of Chemical Industry.

Professor W. O. Lunberg, Director of the Hormel Institute, Minnesota and President of the American Oil Chemists' Society will deliver the first "Oils and Fats Group International Lecture" in London on Tuesday, September 29, 1964. The subject will be concerned with some nutritional aspects of fats. Further information may be obtained from the Hon. Secretary of the Oils and Fats Group, Dr. H. Jasperson, c/o J. Bibby & Sons Ltd., Research Department, King Edward Street, Liverpool, 3.

Symposium on the use of radioisotopes in animal nutrition and physiology.

The symposium which is sponsored by the International Atomic Energy Agency (IAEA) and the Food and Agriculture Organization of the United Nations (FAO) will be held in Prague, Czechoslovak Socialist Republic, from November 23 to 27, 1964.

The topics to be covered are:

1. Physiology and biochemistry of milk secretion.
2. Metabolism and requirement of trace elements including magnesium.
3. The influence of environmental factors upon animal production and reproduction.

Scientists who wish to participate must be nominated by the competent official authority (National Atomic Energy Commission, Ministry of Foreign Affairs, National FAO Committee or Ministry of Agriculture). Participation forms can be obtained from the competent official authority (see above) or directly from the joint IAEA/FAO Symposium Secretariat, Kärntnerring 11, Vienna 1, Austria.

R. LIM,
f. Datin Lady Thomson, M.R.C.S., L.R.C.P.,
Hon. Overseas Correspondent in Malaya,
Institute for Medical Research,
Kuala Lumpur.

NOTICES

THE SECOND MALAYSIAN CONGRESS OF MEDICINE IN MAY 1965 FOR 3 DAYS.

VENUE: The Institute of Pathology, General Hospital, Singapore.

PURPOSE: To stimulate discussion in general medicine and surgery, including orthopaedics, therapeutics, obstetrics and gynaecology.

Papers are invited each lasting ten minutes with five minutes discussion.

REGISTRATION FEE: M$5/-.

Please address all correspondence to:—

Mr. ROBERT C. K. LOH,
The Second Malaysian Congress of Medicine,
General Hospital,
Singapore - 3.

Telephone: 7214.

PATRICK BUXTON MEMORIAL PRIZE

The Patrick Buxton Memorial Prize, endowed by his relatives in memory of the late Professor Patrick Alfred Buxton, C.M.G., F.R.S., Director of the Department of Entomology at the London School of Hygiene and Tropical Medicine from 1926 to 1955, is open to competition among past or present students and staff of the London School of Hygiene and Tropical Medicine.

The Prize of £150 will be awarded for the best essay relating to medical or veterinary entomology or an allied subject based on a candidate's published or unpublished research. Essays should reach the Dean, London School of Hygiene and Tropical Medicine, Keppel Street (Gower Street), London, W.C.1, not later than 30th September, 1965.

Pusat Penyelidekan Perubatan
(Institute for Medical Research),
Jalan Pahang,
Kuala Lumpur.
8th June, 1964.

Dear Sir/Madam,

There was a good response to our invitation to the Tea-party held on 3rd June, 1964, in honour of Dr. & Mrs. J. W. Field prior to their departure from Malaya after 39 years of service to this country in spite of the inclement weather and other social commitments connected with the King's birthday celebrations. Many apologies were received from people who would like to have been present and so I am circulating some information about the Party.

We were particularly happy that the Hon'ble Mr. Khaw Kai Boh, P.J.K., Minister of Local Government and Housing, could be with us. In his speech Mr. Khaw said that he was happy to have been associated with Dr. Field as a member of the Cholera Enquiry Commission in which Dr. Field rendered valuable services. Dr. Field had contributed greatly to the advancement of our knowledge of malaria particularly in the fields of microscopical diagnosis, staining methods, morphological studies, chemotherapy and chemoprophylaxis. Mr. Khaw also stressed the initiative taken by Dr. Field in welcoming foreign scientists to work at the I.M.R. since medical science was international. The policy has been continued and he was glad to find at the I.M.R. to-day research workers belonging to the U.S. Army Medical Research Unit, U.S. Public Health Service and Hooper Foundation side by side with Malaysian scientists, Colombo Plan experts and WHO consultants. In this way, the Institute was serving the country by helping to solve some of our medical and health problems. Although Dr. Field retired as the Director of the I.M.R. in 1956 he has continued his work on malaria and has just published a book on the Microscopical Diagnosis of Human Malaria in collaboration with the present Director, Professor A.A. Sandosham. He was glad to hear that they will continue their collaborative effort, even after Dr. Field returns to the United Kingdom, and publish yet another book on malaria.

Mr. Khaw said that Dr. Field had received honours from the British Government, the Royal Society of Tropical Medicine & Hygiene, and the University of Malaya. To-day he was happy to be able to congratulate Dr. Field on the gracious award of the J.M.N. by the Yang di-Pertuan Agong. He wished Dr. & Mrs. Field "bon voyage" and many happy years of retirement in their homeland.

Miss Yap presented Mrs. Field with a bouquet kindly given by Dr. (Miss) Soo Kim Lan. Prof. Sandosham, who presided, handed Mrs. Field on our behalf with some Kelantan silverware as a memento of their stay in Malaya.

After the Tea the gathering adjourned to the Division of Malaria & Filariasis Research at the I.M.R. where Mrs. Field unveiled a plaque, in honour of her husband, which had been affixed to the wall over the bench where Dr. Field had spent many a pleasant and rewarding hour of his time peering through his microscope at "thy cunning seeds, O million-murdering Death." This should serve as an incentive and inspiration to future young scientists working at the I.M.R.

A farewell group photograph, size 11 x 4½ ins., is available at $2.00 a copy.

Yours sincerely,
(Sgd.) YAP LOY FONG

LETTERS TO PROF. SANDOSHAM FROM DR. & MRS. FIELD

Malacca,
June 4, 1964.

Dear Professor Sandosham,

You and your colleagues have placed in my old laboratory a plaque recording my association with the Institute and have called on my wife to unvail it at a farewell party given in our honour. In the course of my career in the Malayan Medical Service I have received recognition from the British and Malaysian Governments, the University of Malaya, and the Royal Society of Tropical Medicine and Hygiene, for work which was not mine alone but shared with my colleagues, work which was significant in its impact on medical thought and practice as much for the chances of timing as for its quality. No form of recognition gives me greater pleasure than that which now comes to me from colleagues in the laboratories where I have spent some of the happiest years of my life. The honour is one which above all others I shall treasure in memory. To all who have paid me this tribute and to all who gathered on the eve of our departure from Malaya to wish us well I would like to say how deeply we were moved by the warmth of their regard.

Yours sincerely,
(Sgd.) J. W. FIELD

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Rumah Mambu,
June 6, 1964.

Dear Professor Sandosham,

I would like to add my thanks to those of my husband for the wonderful farewell party you gave to us on the eve of our departure from Malaya and for the beautiful gifts presented to us on this occasion. I shall cherish them as a happy reminder of our friends in the Institute and Medical Services.

Yours sincerely,
(Sgd.) ELSIE FIELD