meals or at night are far more important than dietary schemes, which are unnecessary, and drugs.

We know that the high gastric acidity persists and that the exaggerated peristalsis often subsides if the patient is free from worry and stress. The first sign that it is returning is usually that of vague discomfort before food or of waking in the night for no apparent reason. I believe that this gastric unrest precedes duodenal ulceration. If I am right its prompt control should prevent the relapses which hitherto have been a reproach to our therapeutics. Therefore, when such early symptoms are noticed, or again during periods of mental fatigue, worry, and stress, the administration of belladonna alkaloids should be resumed and be continued until the patient has been symptomless for a week. It is especially the night dose which is of value. Alkaline or antacid preparations have no place in therapeutics at this stage: they mask symptoms and encourage relapse.

Summary and Conclusions

The value of belladonna and its correct administration in treatment of duodenal ulcer are described. The relationship of ulcer pain to acidity and hypermotility is discussed. The use of antacids is considered. The value of phenobarbitone and cannabis indica is described. Reference is made to certain substances in common use which aggravate peptic ulceration.

Belladonna reduces gastric and duodenal spasm and the emptying rate of the stomach. It does not affect acidity. To be effective the dose must be large enough to cause persistent dryness of the mouth. The operation of vagotomy is unjustifiable. Alkalis and other antacids have such a transient and variable effect on gastric acidity that they might well be discarded as of little value. If given they should be combined with the administration of olive oil. Their danger lies in the masking of symptoms while the disease progresses. Continuous milk-drip-feeding often completely neutralizes free hydrochloric acid in the stomach. Cannabis indica is a valuable sedative for use in the acute phase.

The cannabis indica used in these experiments was kindly supplied by British Drug Houses, Ltd.

REFERENCES

- Bennett, T. I. (1922). *Lancet*, 2, 866.
 Bisgard, J. D., Matson, G. M., and Hirschmann, J. (1942). *J. Amer. med. Ass.*, 118, 447.
 Bolton, C. (1928). *Lancet*, 1, 1159.
 Bonney, G. L. W., and Pickering, G. W. (1946). *Clin. Sci.*, 6, 63.
 Christensen, O. (1931). *Acta med. scand.*, Suppl. 37.
 Crohn, B. B. (1918). *Amer. J. med. Sci.*, 155, 809.
 Douthwaite, A. H. (1938). *British Medical Journal*, 1, 1143.
 — (1939). *Practitioner*, 143, 461.
 — and Lintott, G. A. M. (1938). *Lancet*, 2, 1222.
 Hurst, A. F. (1911). *The Sensibility of the Alimentary Canal*. London.
 Nicol, B. M. (1939). *Lancet*, 2, 881.
 Palmer, W. L. (1926). *Arch. intern. Med.*, 38, 603, 694.
 Poulton, E. P. (1928). *Lancet*, 2, 1223.
 Ryle, J. A. (1923). *Ibid.*, 2, 843.
 — (1926). *Gastric Function in Health and Disease*. London.
 — and Bennett, T. I. (1937). *Guy's Hosp. Rep.*, 87, 145.
 Schick, K. (1910). *Wien. klin. Wschr.*, 23, 1229.
 Wolf, S., and Wolff, H. G. (1943). *Human Gastric Function*. New York.

Dr. Simon Flexner, who was born in 1863 and died in 1946, is commemorated in a pamphlet issued by the Rockefeller Institute for Medical Research, printing speeches delivered on June 12, 1946, at a memorial meeting. In 1902 the Board of Directors requested Dr. Flexner to state his views on the establishment of a research institute, and in 1903 he went to New York to take charge of the Rockefeller Institute's pathological laboratories, becoming Director of the Institute in the same year. One of the speakers quotes from a speech he made in 1933: "There are no closed compartments in nature into which man, animals, and plants can be separately placed. All are related organically and, as we may say, united physiologically and pathologically. . . . If, therefore, we would learn, and through learning grow more powerful and effective to prevent and cure disease, to lengthen life and to increase happiness through security in all its various forms, then we should endeavour to advance in biological knowledge, which alone can free us still further from the evils of disease."

BORNHOLM DISEASE IN THE TROPICS

BY

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An outbreak of Bornholm disease occurred at Aden in the late hot season of 1946. Between Aug. 17 and Oct. 25 we saw 35 cases. This malady has at various times been reported from Northern Europe, U.S.A., Britain, Southern Australia, and more recently from Egypt. So far as we are aware only one previous outbreak of the disease has been reported in the Tropics (McDaniel, 1944), although conversation with Service colleagues has indicated that it is not unknown in parts of tropical India and in Singapore. Aden, although a busy port of call on the East-West routes by sea and air, is nevertheless a relatively small and well-defined community, or rather collection of communities, and eminently suitable for studying an epidemic. All our cases were treated in the R.A.F. hospital, with the exception of two admitted to neighbouring sick quarters, two seen at their home (family of an R.A.F. officer), and one Arab taxi-driver who attended as an out-patient.

The same basic syndrome, with minor variations, has been described under many titles—"epidemic muscular rheumatism," "devil's grip," "epidemic myalgia," "Bornholm disease," "epidemic myositis," "epidemic pleurodynia," and "acute benign dry pleurisy." The condition is infective in origin and almost certainly primarily a lesion of the diaphragm, the exact nature of which is not clear. In view of this we have preferred to retain, for the present at least, the somewhat meaningless title first given to the syndrome by Sylvest (1934)—namely, "Bornholm disease."

With the exception of one case (the Arab taxi-driver) the outbreak was confined to personnel of the Services and their families. The age incidence, therefore, was such as might be expected from any condition affecting the Forces (Table 1). The incidence among officers and other ranks was: officers,

TABLE I.—Age and Sex Incidence

Age:	0-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45+	Total
Males . .	0	1	6	16	3	2	0	2	0	30
Females . .	0	1	0	1	1	1	1	0	0	5
Total	0	2	6	17	4	3	1	2	0	35

6; officers' families, 3; other ranks, 24; other ranks' families, 2. The ratio of British officers to other ranks in Aden is approximately 1:13. The relatively high incidence of the disease found in officers is thus in accordance with the Egyptian experience of Scadding (1946), who noted a "more common incidence among officers than among other ranks."

Clinical Features

Mode of Onset.—The onset was usually abrupt, with pain, headache, and some degree of fever as the most constant features. Only five cases suffered from upper respiratory tract catarrh, for periods varying between a few days and three weeks, before the onset of classical symptoms. Two cases had prodromal colic and diarrhoea, while a further two complained of lumbar backache for a few days previous to the attack. It is difficult to assess the significance of these various prodromata, since the commonest ailments seen in Aden are probably upper respiratory tract

infection, non-specific diarrhoea, and short-term fevers giving rise to various combinations of aches and pains.

The Pain.—The onset of pain was usually sudden and came on either at rest or after exercise. Thus one patient attributed his pain to the fact that he had spent an afternoon on the beach throwing stones. Another was seized with pain after riding, while several had been taking more violent exercise—for example, soccer and hockey. It seems most likely that these were all *post hoc ergo propter hoc*. As a rule the most acute pain was felt at the onset, although in a few cases (see below) an equally if not more severe attack was experienced in a recurrence. Two types of pain were observed. The first and most common was described as "sharp," "cutting," or "knife-like," while the second was of a constrictive nature, one patient saying that the sensation was like having "tight webbing strapped round the lower chest." The pain was always worsened by respiratory effort, as in deep breathing, coughing, and yawning, and even by movement in bed. The position of greatest comfort in bed varied. Quite a number preferred lying on the affected side, while an equal number preferred to lie flat on the back. A few cases achieved comfort from being propped up in bed, and some from lying on the sound side. The pain was felt along the right or left costal margin, in the epigastrium, or in various combinations of these sites. In a few cases tightness across the anterior chest was present. Two cases had no complaint of pain, but only a febrile upset consistent with the disease, and both developed orchitis in convalescence. The actual site of pain at the onset is shown in Table II. It will be seen from this table

TABLE II.—Distribution of Pain at Onset

Site of Pain	No. of Cases
Right costal margin	6
Left	4
Epigastrium	8
Right and left costal margin	4
Right costal margin and epigastrium	3
Left	3
Right and left "costal" margin and epigastrium	Nil
Tightness, anterior chest	2
" + epigastrium	3
Febrile upset only	2
Total	35

that there was no particular predilection for any one of the sites usually involved. Spread of pain was observed in 11 cases. Of these, eight showed final involvement of both costal margins and epigastrium, while two showed spread from the epigastrium to one side, and one from one side to the epigastrium. Referred pain was relatively common, being present in 11 cases. In several instances this was actually more severe than the pain around the lower chest. The sites affected were: shoulder-tip (bilateral), 3 cases; shoulder-tip (unilateral), 5; interscapular, 2; umbilicus to groin, 1 case. The shoulder affected was in direct relation to the side of the lower chest affected. The duration of the pain is given in Table III. It will be seen that 24 of the 33

TABLE III.—Duration of Pain in Days

Days:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	23
Cases:	—	4	8	2	4	1	5	—	2	—	2	1	—	1	1	—	1	1

cases were entirely free from pain in from two to seven days. The longest recovery time was 23 days. It should be noted that these times are for *complete* clearance of the pain. Exacerbations were of frequent occurrence, but there was no real instance of relapse. In several cases the initial pain had almost, but never entirely, disappeared before recurring in an equally and sometimes more severe form.

Headache.—Headache was present in 18 of the 35 cases. In 11 it occurred at the onset, while in the remaining seven it came on in from two to seven days. The post-onset headaches were always more severe than the others, and almost amounted to a definite complication. The pain was excruciating, being frontal in three instances and generalized in four. In one case (D. M. P.—see below) the headache was associated with signs of meningeal irritation and was severe enough to warrant lumbar puncture. The cerebrospinal fluid, although showing a very slight increase in pressure, was normal in every other respect. The duration of the headache in its severe phase varied from one to four days, but occasionally the patient was left with a "heaviness" or dull ache for several days longer.

Pyrexia.—With one exception every case was pyrexial at the onset. Twenty-two had temperatures not exceeding 100° F. (37.8° C.), seven between 100° and 102° F. (37.8° and 38.9° C.), and five over 102° F. The highest temperature noted was 105° F. (40.6° C.), but the higher temperatures were never sustained beyond a single recording. The chart usually showed a fairly rapid return to normal, 28 cases being normal within four days, 32 within seven days, and 34 within 12 days. The pulse rate for the most part was in accordance with the temperature.

Sore Throat.—Fourteen patients complained of soreness of the throat in the initial phase. All of these presented a generalized inflammation of the fauces without exudate. Throat swabs were examined in six of these, with the following cultural results: *Staph. albus*, 1 case; *Staph. aureus*, 1; non-haemolytic streptococcus, 1; haemolytic streptococcus and *Str. viridans*, 1; *Staph. albus*, non-haemolytic streptococcus, and *Str. viridans*, 1; no growth, 1. Throat swabs were also examined in six cases without sore throat, the result being: *Staph. albus* and non-haemolytic streptococcus, 3 cases; non-haemolytic streptococcus, 2; *Staph. albus*, 1 case.

Other Symptoms.—Anorexia was fairly common (21 cases). Nausea was present in two cases, vomiting in one. In two cases cough with sputum was troublesome in the acute phase. Pain in the lower limbs was observed in one case. The bowels showed no great change from the normal, diarrhoea being present in six cases, constipation in five.

Physical Signs.—Examination of the chest revealed no abnormal signs, except in one case in which a very distinct pleural rub developed on the sixth day of the disease and lasted for eight days. The rub was unusual both in its intensity and in its wide distribution over the chest, and it could be demonstrated by palpation as well as by auscultation. It seems probable that it was due to a super-added fibrinous pleurisy. Repeated clinical and radiological examination showed no signs of any effusion. Subcostal tenderness was present in 16 patients—unilateral in 10, bilateral in three, and epigastric in three. Upper abdominal guarding and rigidity were noted in only four cases. Cutaneous hyperaesthesia was not a feature of this outbreak, but was observed in four cases. It was localized to the costal margin and corresponding lower part of the chest.

Radiological Findings.—X-ray films of the chest were taken in 25 of the cases, while 21 were screened in the acute phase of the illness. The diaphragm was freely mobile in every case, and no abnormality was found in the lung fields.

Haematology.—Twenty-four cases were subjected to blood examination, comprising red cell count and haemoglobin estimation, white cell and differential count, and erythrocyte sedimentation rate. The red cells varied between 4.2 and 5 millions per c.mm. and the haemoglobin between 80% and 100% (Sahli). The colour index was

invariably around 1. There was no abnormality in the red cells, and no abnormal cells were present. These findings are in accordance with those obtained in healthy persons in Aden. The white cell counts were: Under 8,000 per c.mm., 2 cases; 8,000-10,000, 10; 10,000-12,000, 10; 12,000-13,000, 2. Differential counts showed that any increase in cells was in the polymorphonuclears. Lymphocytes, monocytes, and eosinophils showed no departure from normal. The erythrocyte sedimentation rates (Westergren method) in the acute stage of the illness were:

				No. of Cases
0-15 mm. in 1st hour	..	..	..	5
15-20	"	"	"	4
20-30	"	"	"	6
30-40	"	"	"	2
40-50	"	"	"	4
50-60	"	"	"	2
60-70	"	"	"	1

The erythrocyte sedimentation rate, noted at weekly intervals, showed a return to normal in periods varying between seven and 21 days, thus revealing a very distinct lag behind clinical clearance. In the cases developing orchitis in convalescence (see below) a distinct rise in the E.S.R. was noted in six instances, while in a further six the progress of the E.S.R. to the normal figure was uninterrupted. (Note: 0-15 mm. in the first hour was regarded as a normal figure for men in Aden.) Blood culture was carried out in only one case. The culture remained sterile.

Complications.—*Orchitis* was by far the most outstanding complication, occurring in 12 of the 30 male cases. It was always unilateral, and affected the right and left sides equally. There was usually an accompanying mild febrile reaction. The day of disease on which the orchitis developed is shown in Table IV. The orchitis cleared for

followed by profuse sweating. Sleep was impossible owing to general discomfort.

"The next morning the temperature was 103.8° F. (39.9° C.) and the pain was severe in the right lower chest and back. There was marked cutaneous hyperaesthesia of the anterior chest and upper abdomen. During the day the temperature fell to 101.8° F. (38.8° C.) and pain subsided, being noticeable only in the lumbar region. On Sept. 4 I felt perfectly well again. My appetite returned, the cough disappeared, and apart from slight backache there was no discomfort. The temperature was normal.

"In the early hours of the 5th the pain in the right side of the chest returned, exactly the same as before. The temperature was 99.4° F. (37.4° C.). By midday the pain in the right side ceased and was replaced by a similar pain in the left lower chest, with aching in the left shoulder-tip, and aggravation of the symptoms occurred with diaphragmatic movements. By 2 p.m. the temperature was 101° F. (38.3° C.), and the pain, particularly in the left shoulder area, was very severe. A hypodermic injection of morphine, 1/4 gr. (16 mg.), gave relief. At about 8 o'clock the same night headache over the vertex began. It was quite the worst headache I have ever experienced, and lasted until the middle of next day. Recovery started on Sept. 7 and was uneventful apart from persistent right-sided headache and vague right chest pain, which lasted for a further week."

Physical examination revealed no abnormal signs other than tenderness, present at first in the epigastrium and along the right costal margin, and later along the left costal margin. X-ray examination and screening of the chest showed no abnormality. *Staph. albus* and a non-haemolytic streptococcus were cultured from the throat. On Sept. 9 the E.S.R. was 21 mm. in one hour and the total white cell count 12,000 per c.mm. (78.1% neutrophils). On Sept. 18 the E.S.R. was 7 mm. in one hour and the total white cell count 10,200 per c.mm. Lumbar puncture on Sept. 6—that is, at the height of the headache—showed the cerebrospinal fluid to be completely normal.

Treatment

Treatment was perforce symptomatic. The milder analgesics such as codeine and aspirin were largely used and found of some value. Likewise the salicylate group of drugs often gave relief, and these combined with a nightly barbiturate became the routine line of treatment, with the hypodermic injection of morphine, 1/4 gr. (16 mg.), reserved for especially severe cases. The patient was made comfortable in bed in the position he himself chose, and he had what he wished to eat. The appetite usually recovered quite quickly. The headache was often of such severity as to justify the prescribing of morphine. Orchitis was treated simply by rest in bed and the use of a suspensory bandage.

Differential Diagnosis

In its epidemic form Bornholm disease is unlikely to be confused with other conditions, but sporadic cases or cases occurring at the start of an epidemic may give rise to considerable difficulty.

(a) *Pleurisy* has obviously to be considered, but the unilateral nature of this condition, together with the absence of chest signs in Bornholm disease, is usually sufficient differentiation. Scadding (1946), however, detected a pleural rub in 11 of his 20 cases, and indeed used the name "acute benign dry pleurisy" for the disease.

(b) *Upper abdominal emergency* has been reported as being simulated by Bornholm disease. Although a few of our cases presented upper abdominal tenderness and muscular guarding there was never any great difficulty in deciding that the case was not an acute abdomen.

(c) *Infective hepatitis* in the pre-icteric stage can give rise to real difficulty. Here we have an illness characterized by pain, tenderness, and sometimes muscular guarding below the right costal margin, by pyrexia, and by general upset. The pain, however, has never the same relation to respiratory effort, and nausea and vomiting are much more constant. The development

TABLE IV.—*Development of Orchitis in Relation to Day of Disease*

	Day of Disease												
	1-7	8	9	10	11	12	13	14	15	16	27	39	
No. of cases ..	—	1	—	1	—	3	1	—	—	4	1	1	

the most part in two to six days, only one case lasting as long as 10 days. There was no apparent corresponding ovaritis in any of the female patients. *Headache* developing *after* the onset was, as already stated, of such intensity as to be classed as a complication, and was present in seven cases. Actual encephalitis or meningo-encephalitis, which has been reported in other outbreaks, was not observed by us. *Pleurisy* has also been described as a complication. One case (see above) developed a marked pleural rub, which we considered to be due to a fibrinous pleurisy. Physical signs disappeared in eight days and x-ray findings were normal.

A Personal Account of the Disease

One of us (D.M.P.) developed the disease, and it is considered worth while to include his personal account of the illness.

"The first sign of illness was noticed in the morning of Sept. 2, 1946, when upper abdominal pain commenced. The pain was quite localized in the central epigastrium; it was of a constant aching character and slowly progressive in severity, aggravated by movement as a whole. By 2 p.m. there was so much discomfort that I was unable to walk about, had no appetite, and felt ill. Aspirin was taken without effect. By 6 p.m. the pain had moved to the right costal margin and was definitely affected by movements of the diaphragm. There was also a constant aching sensation in the right shoulder-tip. The temperature was 101.8° F. (38.8° C.). A slight irritating cough appeared and there were the usual pyrexial symptoms of headache, giddiness, etc. Later that night there was a short rigor

of jaundice and the presence of bile in the urine about the fourth to seventh day finally clinch the diagnosis.

(d) *Malaria* was an occasional difficulty, especially those cases showing pyrexial symptoms with pain in the left side and tenderness on palpation below the left costal margin without obvious splenic enlargement. The practice of examining blood films for malaria parasites in all cases of pyrexial illness usually, but not always, provided the answer.

Epidemiology

The outbreak reported here occurred in the late hot season in Aden, and the weekly incidence of cases, in terms of onset, is shown in Table V. A study of meteorological charts revealed no significant climatic changes from previous years.

TABLE V.—Weekly Incidence of Cases (in terms of onset)

Week ending	No. of Cases	Week ending	No. of Cases
Aug. 23	3	Sept. 27	3
" 30	6	Oct. 4	1
Sept. 6	9	" 11	0
" 13	7	" 18	1
" 20	4	" 25	1

The causal agent has never been discovered. The clinical picture, the nature of the complications, and the failure to demonstrate any constant bacterial agent suggest a virus infection, although the mild leucocytosis encountered invariably showed an increase in the polymorphonuclears. The mode of spread, too, is somewhat vague. The various modes postulated have been direct by droplet infection and indirect by infected water, infected food, or insects. In Aden there are several well-defined communities. These include the British Services, Indian Services, European civilians, Indian civilians, and the local native population (chiefly Arabs and Somalis). As previously stated, the outbreak was confined to the British Services, with the exception of the single case in an Arab. The water supply is derived from deep wells and is very pure. It is examined bacteriologically at regular intervals at many points and has always been satisfactory. Moreover, the supply is common to the entire population, and it is difficult to conceive why, if the infection were water-borne, virtually the Services alone should be affected. The native population use goats' milk chiefly. The Europeans use cows' milk, drawing their supplies from two main sources—a civilian dairy-farm and a Services dairy-farm—but there is considerable interchange between the two. No cases of the disease occurred in the staffs of the respective dairies, and bacteriological examination of the milks was satisfactory at the time of the outbreak. Food-borne infection was considered, since food supplies to the British Services, civilians, Indian Services, and natives were all from different sources. An interesting feature in this respect was seen in one camp where a unit of Cingalese troops were living in proximity to an Indian unit. The Cingalese were on British Service rations, while the Indians had their own special dietary. Two of the Cingalese detachment developed the disease, while no cases occurred among the Indians. It must be stated, however, that in spite of the close proximity of these units there was practically no "mixing" between the two. Another most interesting fact was that while the medical staff of the Indian hospital in Aden saw no cases of Bornholm disease, they *did* have an outbreak of mumps among Indian personnel at that time. The R.A.F. and civilian authorities did not have a single case of mumps. The importance of this will be realized when one states that the Indian authorities had several cases admitted with orchitis which they presumed, in view of their epidemic, to be complications of "missed" cases of mumps. Insect-borne disease is unlikely, since Aden is comparatively free from most of the usual pathogen-carrying insects.

While infection conveyed by milk or food cannot be excluded, it seems more likely that the spread is direct by droplet infection. The disease is known to occur in Egypt (Scadding, 1946), and Aden is reached in less than 24 hours from there by the usual air route, thus making the introduction of infection, even with the shortest incubation period, easy. There is surprisingly little "mixing" between Service and civilian personnel in Aden, so that an epidemic in one would not necessarily pass readily to the other. The case of the Arab taxi-driver may be significant, for here was a native, having his own particular diet including goats' milk, who developed the disease in a fairly severe form. Droplet infection would seem the most obvious mode of spread in this instance. There was one example of family infection—an R.A.F. officer, his wife, and two children all developing the disease at varying times within eleven days. At the height of the outbreak five of the hospital staff, including one medical officer, one nursing sister, and three nursing orderlies, all in close contact with cases, developed the disease. Furthermore, one patient, who was in hospital with a left-sided pleural effusion for about three months, contracted Bornholm disease affecting chiefly the right side and complicated by the later development of orchitis. He had been nursed in a general ward which included several cases of the disease, and was almost certainly cross-infected. Lastly, the incidence of faucial inflammation at the onset in 14 cases would seem to lend support to the view that the mode of spread is direct from case to case by droplet infection. The incubation period appears to be a short one. Huss (1934) found it to be about four days, and such evidence as we had agreed with this finding.

Summary

An outbreak comprising 35 cases of Bornholm disease occurring in Aden in the late hot season is described.

The clinical picture, with minor variations, approximated to the classical syndrome.

Blood examination showed only a slight polymorphonuclear leucocytosis and a raised E.S.R.

Radiological examination showed no deviation from normal.

Orchitis was the most outstanding complication, being present in 12 of the 30 male cases. Dry pleurisy complicated one case, while headache of such severity as to be classed as a complication was present in seven.

The epidemiology is discussed. Direct droplet infection is considered the most likely mode of spread, although food or milk-borne infection cannot be excluded.

Our thanks are due to Group Captain G. P. O'Connell for permission to publish this report; also to Flight Sergeant P. Gaul for his technical assistance with the laboratory work.

REFERENCES

- Huss, R. (1934). *Bull. Off. int. Hyg. publ.*, **26**, 1083.
McDaniel, W. S. (1944). *U.S. Nav. med. Bull.*, **43**, 664.
Scadding, J. G. (1946). *Lancet*, **1**, 763.
Sylvest, E. (1934). *Epidemic Myalgia*, London.

The beliefs and rituals of primitive races, by their remoteness from our experience, the obscurity of their significance, and their monotony, are sometimes dull to read about to any but anthropologists; the beat of distant drums, exciting at first, falls on soon-tired ears. Mr. Lewis Lett, in *Savage Tales* (Wadley and Ginn, Dominion House, Bartholomew Close, London, E.C.1: 8s. 6d.), has adopted the form of the short story and used it with considerable imagination to record the myths and customs of some of the Papuan tribes. From many years' experience of living among them he has acquired a remarkable facility at penetrating the native mind and reveals its passions, fears, and aspirations in the setting of the natives' daily life and as part of the characters of individual men and women. His book is the more valuable in that he records in an attractive manner a way of life that is gradually disappearing as the white man's civilization encroaches upon it. The opportunities for intimate contact with the Papuans that he has enjoyed will never recur.