

centimetres of water on an empty bladder. The bladder is emptied after one hour and again in two hours and the specimens examined for urea. If either specimen contains 2% of urea, the concentration is not impaired, but lessened percentage is in proportion to renal inefficiency. Urea is one of the most potent diuretics and occasionally a diuresis is produced; if the second specimen (the important one) is over one hundred and twenty cubic centimetres the test should be repeated. This test is also dependent on the rate of absorption of urea from the small bowel and so secondarily on the rate of emptying of the stomach. Though suffering from these disadvantages, most valuable information has been gained from its aid.

Lastly we come to the tests dependent on the elimination of dyes, of which the most popular is phenolsulphonephthalein. An ampoule of this substance is injected intramuscularly and a catheter or ureteric catheters collect the urine in two samples after one and two hours. By colorimetric calculations the amounts of the dye excreted can be determined. By the first hour 50% and by the second hour 70% of the drug should be eliminated. This test is particularly useful in determining a unilateral lesion and the efficiency of the other kidney and is the one most extensively used in surgical practice. Its great drawback is that if any blood is present, an accurate colorimetric reading is impossible.

In conclusion, I would like to emphasize that all these tests are merely the handmaidens of the physician to assist him, together with a full physical examination and clinical acumen, in a full assessment of his case and are not to be considered in any way akin to the miraculous findings of the Abrams's box.

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DR. R. H. BAXTER (Hanmer) said that he supported Dr. MacKeddie in his plea for better clinical examination and better correlation between the clinical examination and the laboratory finding. Many genito-urinary surgeons believed absolutely in the blood urea tests as indicative of the fitness of the patient for operation. In many cases, however, they were let down by these tests. Even Maclean's figures were open to doubt especially with regard to blood urea. Many kidneys which were affected to a great extent, yielded a blood urea figure of only fifteen milligrammes and this led the surgeon to operate with bad results later. The blood urea figures must be considered very carefully and he was doubtful of any blood urea if it was not under ten milligrammes, especially if there was any sign of kidney inefficiency.

DR. RHIND replied that everyone agreed that the laboratory tests were still in their infancy. No one claimed any

strength upon any one test. He did not agree with Dr. Baxter's remarks.

DR. J. F. MacKEDDIE (Melbourne) said that in kidney conditions they did not think enough of ordinary examination. With regard to the water test—quantity and specific gravity taken at intervals—this like all other tests, was being replaced by chemical tests.

#### PARAGONIMUS RINGERI IN A NEW GUINEA NATIVE.

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In September, 1926, Dr. T. Clive Backhouse in charge of the laboratory of the Commonwealth Department of Health, Rabaul, New Britain, Mandated Territory of New Guinea, sent to this Institute some specimens which he had obtained from the lung of a native *post mortem*. Of the two flukes found which were identified by Dr. Backhouse as *Paragonimus*, he sent one whole and from the other which he had dissected, sent some eggs mounted on a slide.

This extremely interesting find is being reported and commented on elsewhere. These notes are concerned only with the specific determination.

The complete specimen was sent in 3% formalin solution and was in a well preserved but contracted condition. It was a thick fluke of regular

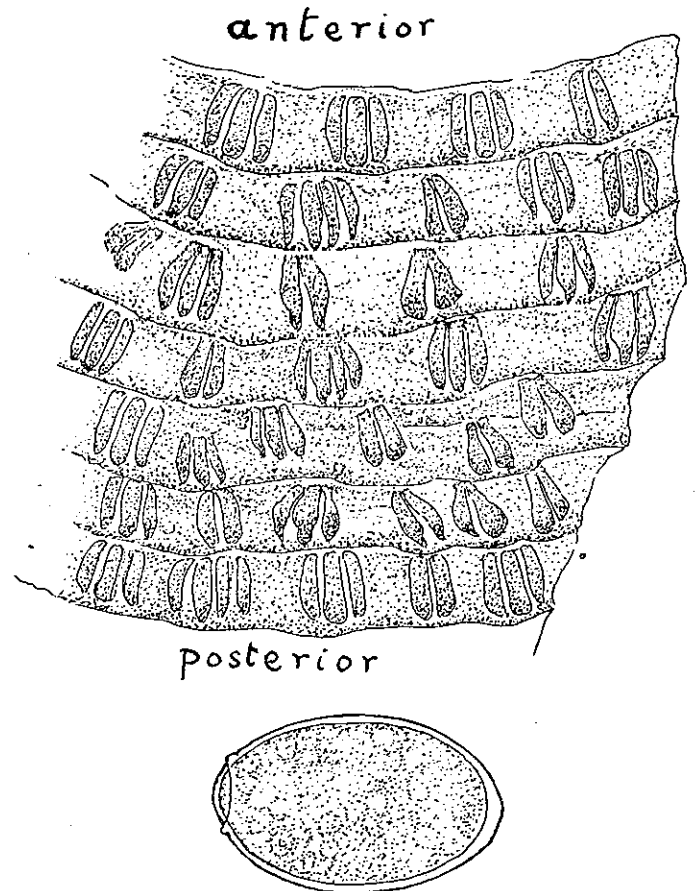


FIGURE I.

Camera lucida drawings of an ovum and of the spines in a portion of integument from the ventral surface between the suckers. The magnification is not the same in each case. The sizes are given in the text.

blunt ended oval form when viewed from above or below. The dorsal surface was more convex than the ventral. The length was 6.8 millimetres and the breadth 5.0 millimetres. The anterior sucker was near the anterior extremity, but looked more ventrally than anteriorly. The ventral sucker was very slightly in front of the middle of the fluke. The distance between the centres of the suckers was 2.7 millimetres. The transverse diameter of the ventral sucker was about 0.8 millimetres, the antero-posterior diameter slightly less. In this worm the oral sucker appeared to be slightly larger than the ventral. The genital pore was situated immediately behind the margin of the ventral sucker and very slightly to the right.

After examination of the external features parts of the integument were removed for examination of the spines and the worm was then stained and cleared. Later serial sections were made. All the main features of the internal anatomy were made out and agreed with the descriptions of the genus. The worm was mature and the uterus packed with ova. The viscera were in the commoner and not the transposed arrangement, the uterus being on the right side, the ovary on the left and the left testis slightly further forward than the right.

According to Ward and Hirsch<sup>(1)</sup> the characters of the spines are the most reliable means of differentiating the species of the genus *Paragonimus*. Vevers<sup>(2)</sup> also in his recent revision of the genus lays stress on the spines and also on the ova as providing the only reliable specific characters. On the other hand Kobayashi<sup>(3)</sup> does not accept the conclusion of Ward and Hirsch that the genus can be divided into species by the characters of the spines nor by any other characters. If we accept the conclusions of Vevers that there are four species of *Paragonimus* separable by the characters of their spines and ova, then the New Guinea specimen must be referred to the species *ringeri*. This is the species which infests man and the dog and cat in Japan and China. The other species are *Paragonimus westermanii* found in India and Malaya, *Paragonimus compactus* in the same countries and *Paragonimus kellicotti* from the pig, dog and cat in America and the tiger in Malaya.

As regards the eggs, unfortunately none was removed from the whole specimen received before it was sectioned. The eggs from the other fluke, received mounted on a slide, had been removed from the uterus, but from what part of it was not stated. They were well preserved. In most of them there was a crease along the side due to shrinkage which affected the breadth but probably not the length, which may, however, have been slightly increased by pressure. The average length of the five best specimens was 0.093 millimetre, the extremes being 0.0938 and 0.0908 millimetre. The breadth of one specimen which was not creased, was 0.056 millimetre. The measurements given by different observers of the eggs of the different species are not all in accord; according to Vevers's figures the egg of *Paragonimus ringeri* is the largest, the average measurements being 0.09 by 0.055 millimetre. Vevers also states that the eggs of *Paragonimus*

*ringeri* and *Paragonimus kellicotti* are distinguished from those of the other two species by the presence of a thickening of the shell at the pole opposite to the operculum. This thickening was a prominent feature in the eggs from Rabaul and is shown in the figure. The evidence from the eggs, therefore, accepting the criteria of Vevers, points to the species being either *ringeri* or *kellicotti* and perhaps very slightly favours *ringeri* which has the longer egg of the two.

Examination of the spines, however, made it clear that the worm must be referred to the species *ringeri*.

The drawing shows the spines in a part of the integument between the oral and ventral suckers rather to one side of the median line. They are arranged in irregular transverse rows, the points directed backwards. In this specimen the points of the spines were frequently covered by a thin layer of cuticle instead of projecting beyond it. In the drawing which was made with a *camera lucida*, the irregularity in arrangement of the spines is slightly exaggerated owing to damage which occurred in preparing the specimen. Owing to foreshortening the length of the spines is less in relation to their breadth than the true relation. A few spines from the same region which had become detached and were lying flat, were measured and found to be about 0.025 to 0.0235 millimetre in length. The spines are arranged in groups of from two to four. This arrangement in groups according to Ward and Hirsch who first drew attention to the spines as specific characters, is characteristic of *Paragonimus ringeri* as compared with *Paragonimus westermanii* and *Paragonimus kellicotti* in which the spines occur singly. Vevers agrees with Ward and Hirsch, but finds that the spines in *Paragonimus compactus* are also arranged in groups.

This specimen must, therefore, be referred to the species *ringeri*, since the character of the ova excludes *Paragonimus compactus*; the shape of the individual spines is also more like that figured by Vevers for *ringeri* than that figured for *compactus*. As already mentioned, Kobayashi does not accept the conclusions of Ward and Hirsch and claims that he has found spines of every variety as well as intermediate forms in specimens from Korea alone.

With reference to the molluscan intermediate host in New Guinea it may be mentioned that the writer while in Rabaul collected a number of operculated fresh water snails from a stream there. These were identified in Melbourne as *Melania truncata*.

#### References.

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- <sup>(3)</sup> H. Kobayashi: "Studies on the Lung Fluke in Korea: On the Life History and Morphology of the Lung Fluke," *Mitteilungen der Medizinischen Hochschule zu Keijo*, 1918; "Studies on the Lung Fluke in Korea; Structure of the Adult Worm," *Mitteilungen der Medizinischen Hochschule zu Keijo*, 1919 (Reprints).