

in as short a time as 60 seconds exposure to the ultraviolet rays of light. With shorter exposures, 15 and 30 seconds, the Virus appeared to be attenuated but not completely inactivated, since some animals inoculated with the brain emulsion irradiated for the shorter periods developed Rabies while the others did not; in the former the incubation period was somewhat prolonged. It was found, further, that inactivation was as complete in the absence of methylene blue as in its presence (dilution of 1 in 25,000). Irradiation with the quartz mercury vapour lamp had a similar effect on Street Virus Rabies. It then occurred to us that this method of inactivation of the Virus might be used instead of the carbolic acid method for the preparation of Rabies Vaccine; the advantage being that 30 days are required for its preparation by the latter method, while by the former a few days would suffice. The present-day Rabies Vaccine is a 5 per cent. emulsion of infected brains in normal saline solution. Accordingly, we irradiated a 5 per cent. emulsion of the brain of a rabbit that was infected with the Fixed Virus Rabies (Paris) for 15 minutes. The emulsion was inoculated subdurally into rabbits almost immediately afterwards. Two out of the three animals so inoculated subdurally died showing typical signs of Rabies. This we thought was due to the ultraviolet rays not having penetrated deep enough into the infected opaque emulsion. We, therefore, oscillated the shallow dish containing the emulsion while it was being irradiated for 20 minutes; by this means the ultraviolet light was enabled to reach the whole of the emulsion. The emulsion, so oscillated and irradiated, was found to be inactive on subdural inoculation into rabbits. These inoculations were carried out on the 6th of July and at the time of writing, one month later, the inoculated animals are alive and well.

Details of this work together with those of experiments designed to determine the antigenic property of ultraviolet irradiated Rabies Vaccine will be reported in the *Indian Journal of Medical Research* at a later date.

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Enteropneusta from Krusadai Island.

THE occurrence of Enteropneusta in the neighbourhood of Krusadai, South India, was first made known by F. H. Gravely and recently the members of the staff of the Zoology Department, Central College, have obtained a very large collection of these interesting forms. S. G. M. Ramanujam has also taken specimens from the same area but it is rather surprising that our collections do not include any of the specimens represented in Dr. Ramanujam's, which does not possess a single form contained in our material. But still both parties were investigating the same area and this rather curious phenomenon of distribution is worth carefully looking into.

I have examined the specimens contained in the two collections. Dr. Ramanujam's specimens are *Ptychodera minuta* and *Glandiceps hacksi* which have been reported from Madras coast by K. Ramunni Menon. The occurrence of these forms near Krusadai must be an interesting fact in their distribution. Among the specimens contained in our collection, there are two distinct species of the genus *Chlamydothorax*. It may be recalled that Spengel mentions in his monograph on Enteropneusta *Ptychodera ceylonica*, two specimens of which were obtained from the west coast of Ceylon. They were comparatively small and on an examination of the external morphology of the branchiogenital and liver regions, but without examining the internal anatomy he concluded that the Ceylon specimens were identical with *Pt. bahamensis*: the latter according to Spengel's suggested scheme of classification would rightly be regarded as *Ch. bahamensis*.

I have carefully examined the internal anatomy of the Krusadai forms and I have no hesitation in saying that there are two different species of *Chlamydothorax* contained in our collection. Spengel's specimens of *Chlamydothorax ceylonica* are not procurable from the University Museum of Giessen, or Berlin and none from Colombo Museum. It is unfortunate that Spengel did not leave on record a description of the internal anatomy of the Ceylonese Enteropneusta; the situation becomes further complicated if we add another Enteropneusta also insufficiently described, viz., *Pt. tricollaris* (Schmarda) from Ceylon.

In examining my material, I have kept these two undescribed or partly described

forms before my mind and I have come to the conclusion that Spengel's *Ch. ceylonica* is entirely different from *Ch. bahamensis*; and Schmarada's *Pt. tricollaris* is the adult specimen of *Ch. ceylonica*. In the paper which I am preparing for publication, I retain *Ch. ceylonica* as a distinct species in which case *Pt. tricollaris* should be treated as its synonym. The second species represented in our collection will be described as *Ch. krusadiensis*. I have assigned one of these forms to Spengel's species, *Ch. ceylonica*, purely on the presumptive basis that this might have been Spengel and Schmarada's forms, and yet it might happen that this species was not known to these authors.

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August 8, 1934.

Balaenoptera indica, Blyth.

MR. McCANN'S note on the great Indian fin-whale published in *Current Science*¹ is interesting and obviously the writer is of opinion that this large whale deserves the rank of a separate species assigned to it by Blyth. Blanford² is not quite sure about the position of the great Indian whale, for he observes that "as already pointed out, this species is probably the same as the great northern fin-whale (*B. sibbaldi*).

Beddard³ writing on the distribution of *Balaenoptera* points out that there seem to be no substantial grounds for retaining such species as *B. indica*, *B. patachonica*, *B. schlegelii*, etc." Blyth⁴ relies on the comparative slenderness of the mandible of the Indian forms of the great fin-whale for elevating them to the rank of a distinct species: a specimen said to be 84 feet long, had a lower jaw measuring only 21 feet. Collett⁵ has mentioned that specimens of *B. sibbaldi*, measuring 80-90 feet long, have lower jaw bones two-ninths of the total length and for a specimen 90 feet long Collett gives 20 feet as the length of the mandibles. Mr. McCann's measurement of the mandible of the specimen recently stranded in Bombay is in accordance with the above figures. In the absence of definite knowledge of the other external and internal characteristics of the Indian forms, it is risky to maintain that they constitute distinct members separable from *B. sibbaldi*. The occurrence of these whales in the tropical seas during summer which, according to the migration theory, should be found in the colder latitudes at the time, is no doubt a strong point, but will not constitute a character for creating a separate species.

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The Silk Industry of Japan.

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MR. C. C. GHOSH'S monograph on the Silk Industry of Japan (Scientific Monograph No. 8 of the Imperial Council of Agricultural Research) is what a publication of this kind should be—a study by a competent sericulturist of the Silk Industry of the premier sericultural country of the world. Such a study is sure to have been conducted with insight, and with a mind keenly alert to educative value. The publication comes with dramatic fitness at a time when the Tariff Board enquiry has drawn attention to the importance of the Indian Silk Industry; and the grant of protection, albeit inadequate, for Indian Silk by the Government

of India has imposed on Silk-producing Provinces and States the duty of developing their sericulture in fulfilment of their implied promise to the Indian weaver and the Indian consumer.

The organisation in Japan has evolved as the result of a purposeful policy working towards a clearly conceived objective. Japanese sericulture is an important expression of Japanese patriotism, and nothing is more striking than the way in which the whole country, from the farmer to the Imperial family, has worked together for the

¹ *Curr. Sci.*, 1934, 3, 1.

² *Fauna of British India—Mammalia*, 1881-91, 568.

³ *A Book of Whales*, 159.

⁴ *Journ. As. Soc. Bengal*, 1859, 28, 488.

⁵ *Proc. Zool. Soc.*, 1886, 253 and *Fauna Brit. Ind. Mamm.*, 1888-91, 567.