

strated from minute study of their characters. The species are *Tubifex rivulorum*, *T. umbellatus* and *Limnodrilus*, sp. *incert.*; the last very abundant. Mr. Lankester then mentioned the gregarinæ of these worms, and the discovery of their pseudonaviculæ having long stiff processes, so that they run into the worms like pins, and in this way penetrate into previously uninfested worms. The formation of the spermatophors of this group of Annelids (the Oligochæta) discovered by Mr. Lankester—Professor Claparède having mistaken them for Opalinoid parasites—was also detailed.

Department of Anatomy and Physiology

On the Embryonal Development of the Hæmatozoon (Bilharzia).—Dr. Cobbold. After commencing with a general description of this remarkable parasite, Dr. Cobbold proceeded to notice the manner in which the larvæ escaped from the eggs; and also their subsequent activity and remarkable alterations of form and structure. He had obtained ample evidence of the existence of a complicated water-vascular system, similar to that described by Dr. Guido Wagener, as occurring in the larva of *Diplodiscus*. The prevalence of the Bilharzia disorder in Egypt and at the Cape was well known; and it had recently been suggested by Dr. Aitkin, that these parasites had some connection with the so-called Delhi boils. He refrained from entering into professional details in this matter: but stated that he had performed a large number of feeding experiments on small fishes, crustaceæ, and molluscs, with the view of putting the question of injection beyond the region of mere conjecture. Dr. Cobbold added that he had obtained for a month past about 10,000 eggs of Bilharzia daily, from a case under his care.

Dr. Cobbold exhibited the heart of a dog filled with Hæmatozoa causing the animal's death. He had received the specimen from Mr. Robert Swinhoe, H.B.M. Consul at Amoy, China, accompanied by a note from the donor, stating that the dog "died on the 18th of April, 1869, at Shanghai, after three days of great suffering." Hitherto, following the authority of M. Bohe-Moorea Diesing and other systematists, he had been accustomed to regard this form of entozoon as the species called *Spiroptera sanguinolenta*; but, in the author's opinion, this view would have to be changed. He hoped, before long, to be able, by further investigation, to set this point at rest. The presence of entozoa in the heart and blood-vessels of animals and man is much more common than is supposed. Thus, MM. Grube and Delafond, who examined 480 dogs, found Filarizæ present in nearly 5 per cent. Most of these parasites, however, were of microscopic size; being probably the brood of the species marked *Filaria sanguinis* in Dr. Cobbold's list. They estimated that these verminiferous dogs severally harboured from 11,000 to 224,000 of these larval hæmatozoa.

Note on Methæmoglobin.—Mr. E. Ray Lankester. It was shown that carbonic acid, when passed through a solution of oxyhæmoglobin, gave rise to two new bands in addition to those of the oxyhæmoglobin itself. This was the nitrite-hæmoglobin of Dr. Gamgee, and the brown cruorine of Mr. Sorby, also identical with methæmoglobin as described by Preyer. Addition of a minute quantity of acetic acid to this solution caused the disappearance of the oxyhæmoglobin bands and intensification of the two new bands, which are those of what really was originally called methæmoglobin by Hoppe Seyler. It can be formed by the passage of CO₂ alone if a weak solution of hæmoglobin is used, as was done by Heynsius, who mistook this product for hæmatin. Its band in red is not identical with that of hæmatin as supposed by Hoppe Seyler and Heynsius, and all previous observers, including Hoppe Seyler, Preyer, Gamgee, and Sorby have missed the second band in blue (the fourth of the mixture of oxyhæmoglobin and methæmoglobin) now figured and described. It was shown that no separation of an albumen accompanies the change of hæmoglobin into methæmoglobin, whilst hæmatin results solely from a splitting up of the hæmoglobin into it and an albumen.

The action of certain Vapours and Gases on the red Blood Corpuscles.—Mr. E. Ray Lankester. These experiments were made with Stricker's gas chamber, which enables the observer to study gradual changes, caused by gaseous reagents, as to the change of form caused by atmospheric air in the red corpuscle of the frog, which had been acted on first by CO₂ as observed by Stricker, was shown to be equally produced by hydrogen, or by carbonic oxide, or by diminution of pressure, hence it was simply to be

ascribed to the diffusion of the carbonic acid. The action of cyanogen gas, carbonic oxide, alcohol vapour, chloroform vapour, and especially of ammonia vapour, was described. A distinction was insisted on between mere definition of the nucleus—as caused by some agents—and granulation of the nucleus. The normal living frog's red corpuscles was inferred to be usually free from any appearance of definition of the nucleus, and to be devoid of an envelope or æcoid, though owing its form to a remarkable condition of tension, which was readily destroyed by physical agents.

On the Relations of Fins of Fishes to one another.—Professor Humphry.

Department of Ethnology and Anthropology

The Pre-Turkish Frontagers of Persia.—Mr. H. Howorth. In continuation of the previous paper the author showed with the assistance of Vivien St. Martin, Thomas, Prinsep, &c., that after the first century, the Indo-Scyths were called Kouschank by the Armenians, Koneichang by the Chinese, that their great king Kanichka who was a convert to Buddhism, and introduced that religion into China and Thibet, was, with his people, previously a fire-worshipper, and that the form of Mithraism, which was introduced at Rome by Pompey and derived by him, in the first instance, from the Parthians, was the original religion of the Massagetæ and the Indo-Scyths.

On the decay of the power of the Indo-Scyths, the remains of the nation were conquered by the Avars or White Huns, and are called by Procopius, Priscu, and Cosmas, White Huns, and Ephtalitæ, and by the Persians Haintheloh. The etymology of these names shows they were the Yuetchi or Massagetæ, led and governed by a caste of Huns.

In latter days these White Huns are to be identified with the Khazars, the ancestors of the Circassians. Thus the Circassians are proved to be lineal descendants of the Massagetæ. That the Circassians are allied to the Thibetans was long ago showed by Mr. Hodgson in the Journal of the Asiatic Society. This is the first time their genealogy as a race has been clearly traced out, and it opens up a new light on Asiatic Ethnography.

On the Manx of the Isle of Man.—Dr. King.

SECTION G.—MECHANICAL SCIENCE

On Ashton and Storey's Steam-Power Meter.—Mr. Ashton. The apparatus described in this paper, as its name implies, shows at all times the measure of the power developed by the steam engine to which it is applied, and registers the aggregate of that power during any required period of time. The mechanism is very like that of a well-balanced chronometer. The whole of the indicating mechanism is very light, and mounted so as to move with great freedom; and the power required to work it is exceedingly small. Its indications would be especially valuable in the case of steamships. The apparatus has been in practical use about a year.

In the discussion which followed this paper the invention was very highly praised.

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ERRATA.—Page 464, second column, line 30, for "monodont" read "homodont"; line 35, for "but its analogue in front has" read "but, unlike its analogue in front, has."