that 88 per cent. of all the subjects examined were infected by some one of these parasites and that 76 per cent. of all the subjects infected were infected by *Ascaris mystax*.

Table 2 gives a detailed record of the age and sex of each subject and the location and extent of the parasitism.

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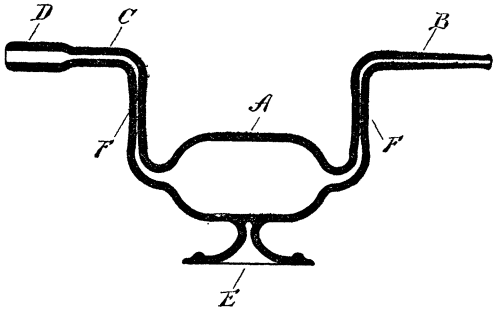
AN IMPROVED PYKNOMETER.

In the course of investigation into the function of the bones of the middle ear there was occasion to determine the specific gravity of those ossicles and their constituent parts. The parts are very small, so that the most suitable method for determining their specific gravities seemed to be that employed by Hammerschlag for determining the specific gravity of a drop of blood.

The specific gravity of methylene bromide, which is greater than that of bone, was gradually reduced by adding ether to it, until the piece of bone under investigation which had been dropped into this solution, remained suspended therein. At this point the specific



gravity of the particle of bone was, of course, the same as that of the solution, which latter was then determined.

I attempted to use the pyknometer with a perforated stopper to obtain equal quantities of the solution and of distilled water for the purpose of comparing their weights; but found the instrument unsatisfactory for exact determinations.

The water did not overflow the stopper as readily as the solution, forming a much larger cap over the perforation so that an equal quantity of water and of methylene bromide could not be obtained. Furthermore, during the necessarily slow process of careful weighing, three to four mg. of the solution would evaporate. Besides, unless special care was taken, a rising temperature would cause the contents to overflow.

To obviate these difficulties, I designed a pyknometer here illustrated in vertical section.

The cylindrical body or bulb, of convenient size *A*, is provided at one end with a capillary inlet—outlet tube or arm *B*, bent as shown; at the other end with a similar tube or arm *C*, having a mouthpiece *D* for drawing in and blowing out the liquid. The arms *B* and *C* are marked as at *F, F;* the whole is mounted on a suitable base such as *E;* by drawing in or blowing out, the exact quantity of liquid can readily be obtained; the lumen of the arms at the marks *F, F* may be extremely narrow and a perfect gauge of quantity be thereby had; no attention need be paid to changes in temperature after the pyknometer is once filled; the lumen being narrow and the arms long, what little evaporation might possibly take place is beyond detection; the instrument is conveniently cleaned and dried by rinsing it with a volatile solution and then passing an air current through it.

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CURRENT NOTES ON METEOROLOGY.

THE CYCLONE OF SEPTEMBER 22–28, 1905, IN THE PHILIPPINES.

The *Bulletin* of the Philippine Weather Bureau for September, 1905, lately received, contains an excellent account of an important tropical cyclone which swept over the Philippines from the twenty-second to the twenty-eighth of that month, over a belt more than a hundred miles wide. This cyclone has been given the name *Cantabria,* after one of the vessels which was wrecked by the storm. The place of origin seems to have been in long. 142° E., and lats. 11°–12° N., between the islands of Guam and Yap. It moved west to Samar, and then northwest to the mainland,

at an average speed of 13.5 miles an hour. Several interesting reports were received concerning the passage of the central 'eye.' Thus, Capt. T. A. Hillgrove, of the cutter *Basilan,* at anchor, noted:

Between 8 and 9 P.M. wind and sea suddenly died down, the sky cleared, and stars became visible. The calm lasted for fifteen minutes. The barometer remained 10 mm. below the graduated glass (700 mm.). After the calm, the wind rushed in from the southeast with hurricane force, and the barometer began to rise.

Before the 'eye' the wind was north. The *Basilan* did not pass through the exact center. The *Pathfinder,* ten miles south, experienced but three minutes of calm. The true center passed between the two vessels, and was, therefore, of very small radius. Later on, observations show that the calm central area increased in size. At Manila, where the center was 24 miles from the city, wind velocities of 90 to over 100 miles an hour were recorded. There is evidence that both ascending and descending winds were produced. In one case roofs fell in, as if overwhelmed by a weight on top. The ocean swell was particularly heavy, and had much to do with the loss of several vessels, including the *Cantabria.* We wish to call special attention to the very complete set of illustrations which accompany this report, including views of damage done on shore; of wrecked vessels; maps of the cyclone track and of the weather conditions; and reproductions of numerous instrumental records.

KITE FLYING IN INDIA.

THE extent to which scientific kite-flying has made its way around the world is evidenced by the publication, as Vol. XX., Part I., of the famous *Indian Meteorological Memoirs,* of 'An Account of the Preparations made for Determining the Conditions of the Upper Air in India by Means of Kites.' The writer is J. H. Field, deputy meteorologist; the date of publication, 1906. One of the chief objects of the work was the determination of the distinctive characters of the monsoon currents in India, leading to other questions in connection with the penetration of the Bengal monsoon current into the country along the base of the Himalayas. The flights took place between August 26 and September 12, 1905, a short distance (9 kms.) from Karachi City. The results show that a nearly saturated stratum of air from the sea extended from about 10 meters above sea-level upwards to a level which rose from 500 m. on August 27 to 1,130 m. on August 31. After that day, until September 9, its limiting height was not reached by the kite, but probably exceeded 1,000 m. By September 12 the upper limit fell again to 600 m. Above this nearly saturated stratum, an extremely dry wind was encountered, the recorded humidity (possible error of 10 per cent.) being in some cases only 5 per cent. to 10 per cent. These warm upper winds were of land origin, and showed very rapid diurnal changes of temperature. The report is well illustrated by means of vertical temperature gradient diagrams, as well as by weather maps.

WORK OF THE PHILIPPINE WEATHER BUREAU.

SOME idea of the amount of work now being done by the Philippine Weather Bureau may be gained from the fact that the *Annual Report* of the director for the year 1903, which has recently been mailed, embraces 1,128 pages, quarto size, of tabulated meteorological observations. With such a volume in hand, or rather on one's desk, for it is too heavy to hold, one who did not know what the Philippine Weather Service has done would be inclined to say, What a hopelessly extravagant expenditure of time and money to collect and publish these data! But the Manila Observatory, and the whole meteorological service, have made the most excellent use of their records. It would be well for meteorology if as good use had everywhere been made of the results of the daily weather observations.

CLOUDINESS AND ASTRONOMICAL OBSERVATORIES.

THE value of accurate records of cloudiness is emphasized by certain suggestions contained in a recent paper by Professor E. C. Pickering, on 'An International Southern Telescope' (*Proc. Amer. Philos. Soc.,* XLV., 1906, 44–53). If the earth be divided into cloudy and clear halves, nine tenths of the present observatories lie in the cloudy regions. It is

a striking fact that if the three extensive clear regions of the earth are considered, there are no large observatories located within them. The interior of northern Africa has no large observatory. The only large observatory in South Africa is in Cape Town, an exceptionally cloudy part of that region. In Australia, the clear interior is left unoccupied, while the two principal observatories are on the coast, at Sydney and Melbourne. The well-known Harvard Southern Observatory, at Arequipa, Peru, is handicapped by clouds in summer (November to March). There seems a possibility of excellent conditions in South Africa, but it is doubtful as yet whether the conditions would be better than at Arequipa.

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PALEONTOLOGICAL NOTES.

THE PENGUINS.

Dr. Wiman's and Dr. Ameghino's papers on fossil penguins are so important as to demand review, although it is some little time since they appeared. Dr. Carl Wiman deals with the bones of fossil penguins obtained at Seymour Island by the Swedish South Polar Expedition; Dr. Florentino Ameghino while nominally giving an enumeration of fossil penguins of Patagonia and Seymour Island gives descriptions and figures of all the species and also discusses their probable origin. Dr. Wiman describes as new five species, each of which is referred to a new genus, while Dr. Ameghino describes nine new genera and thirteen new species, and also replaces the nomen nudum *Apterodytes* by *Paleoapterodytes*. Dr. Wiman, who is very conservative, states that his specimens may represent more than the five species described since, owing to the conditions under which they were found, it has not been possible to correlate the bones. Adding to the nineteen genera and thirty-one species admitted by Ameghino, the seven additional genera and eighteen species given in Sharpe's hand list, we have a total of twenty-six genera and forty-nine species of penguins. None of the existing genera, comprising seventeen species, have as yet been found in a fossil state.

Dr. Wiman ascribes the formation from which his specimens came to the Eocene, but in a note states that Dr. Wilckens, basing his opinion on the marine invertebrates, considers them as Oligocene or Lower Miocene. This agrees pretty well with the views of Ameghino, who holds that Seymour Island is geologically a portion of Patagonia and the horizon of Wiman's specimens Miocene. The point of greatest interest is that both authors state that the earlier species of penguin, so far as shown by their limbs, and especially by the tarsi, are much more generalized than the living species and Wiman, in particular, says that his specimens show a much closer resemblance to the corresponding bones of carinates than do the same parts of modern penguins. The tarsi, it may be said, are comparatively longer in the fossil species than in recent forms and their component bones much less clearly indicated. This is exactly the reverse of what should be found, if the generally accepted theory that the tarsus of the penguin is a survival of the primitive free condition of the tarsal bones, is correct, and further discoveries may, of course, bring to light forms ancestral to the penguins in which the tarsal bones are free. Still it is to be remembered that in *Archæopteryx* the tarsals are fused and this is also the case with the known cretaceous birds in some of which the tarsus is highly specialized. The above facts agree with my own view that a large portion of the characters which have been held to place the penguins in a group apart from other Euornithes, are purely adaptive and while the adaptive features of the short broad tarsus may not at first be evident, it is very likely correlated with the habit of sitting with the tarsus on the ground when at rest. In walking, the tarsus is held upright as in any other bird. Right here, it may be well to say a word or two in regard to the tarsus of *Ceratosaurus,* which is referred to by Dr. Wiman, and to state that Dr. Baur was entirely correct in ascribing the union of the tarsals in this genus to pathological causes. The type of this genus is in the U. S. National Museum