

perhaps those remaining to be found in the coast country are both few and rare. By way of compensation, however, certain Australian birds, the native companion, white ibis, and royal spoonbill, must now be included in the Papuan avifauna as at least temporary sojourners on the banks of the Fly River. It is noteworthy that these birds were found on the Fly River during the continuance in the north of Queensland of a drought which had driven them from their haunts proper and scattered them far and wide in search of water. Of the reptiles, on the other hand, a few new forms are distinguishable. These occur among the lizards. Two handsome snakes, *Chondrophython azureus* and *pulcher*, have been added to the State collection of Papuan ophidians. On the whole, the vertebrate collection is subordinate in importance and interest to that of the insect division of the invertebrates. The whole of the insects collected were examined by the Entomological Department, and two reports on the *Lepidoptera* and *Coleoptera* are appended. From these it appears that several species both of butterflies and beetles are new to science. The collection contains in many instances a large series of examples of the same insect, which is all-important in the case of variable forms, whose unknown range of variation is a prolific source of error. Besides *Lepidoptera* and *Coleoptera* it contains many Hemipterous insects which have not yet been determined. The few forms of Mollusca procured on the Fly River have yielded but one new species, a remarkably fine *Namina*.

#### A MEDIUM FOR PRESERVING THE COLOURS OF FISH AND OTHER ANIMALS.

OUR readers may remember that Mr. Haly, Curator of the Colombo Museum, has for some years been making experiments so as to discover a medium which will preserve the colours of fish and other animals. We quote the following from the last Annual Report of the Colombo Museum:—

"In my last year's report I made some remarks on the use of carbolized oil as a mounting fluid for specimens already prepared by other means, the idea that it was a preservative in itself not having occurred to me. Further experiments this year seem to show (I do not like to speak too confidently in a climate like this, even with twelve months' experience) that it is one of the most perfect preservatives known both for form and colour.

"Coco-nut oil and carbolic acid freely mix in all proportions. The mixtures at present under trial are oil raised to the specific gravity of 10° and 20° below proof-spirit by the addition of acid. Whilst the gum and glycerine process is absolutely useless for any animals except certain families of fish, this mixture is good for every kind of vertebrate. The most delicate frogs are quite uninjured by it, and snakes undergo no change. The delicate plum-like bloom on the geckoes, the fugitive reddish tint on such snakes as *Ablabes humberti*, are beautifully preserved by it.

"Another most important use is in the preservation of large fish skins, which can be packed away in it for an indefinite period, and mounted when wanted. These skins do not require varnishing, neither do they turn brown, but although, of course, they do not preserve their sheen like fish in the oil itself, they always maintain a silvery and natural appearance, quite different from that of ordinary museum specimens. If ever we get a new fish gallery, a show of our large species prepared in this way would form a most effective exhibition.

"It appears also to be a most excellent preservative for Crustacea and the higher orders of Arachnids, and also for Centipedes, but it has hitherto proved a failure for marine invertebrates in general. It must be remembered, however, that the perfect miscibility of the two liquids opens up endless possibilities. Its absolutely unevaporable nature makes it invaluable in a tropical climate, quite apart from its other qualities.

"With regard to this last remark I take the opportunity of stating that the acid enables coco-nut oil and turpentine to be mixed together. This forms a splendid microscopic fluid, in which objects may be allowed to soak without any previous preparation, and in which they become very transparent. A minute species of Crustacean, of the order Copepoda, and the leg of a fly, simply laid on a slide in a drop of this fluid and covered with an ordinary covering-glass, without any cell being made or cement employed, have lain on my table unaltered for the last ten months, and I cannot help thinking that such a medium as this cannot fail to prove a great boon to all workers with the microscope."

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#### SCIENTIFIC SERIALS.

*American Journal of Science*, December.—On Percival's map of the Jura-Trias trap-belts of Central Connecticut, with observations on the up-turning, or mountain-making disturbance, of the formation, by James D. Dana.—The detection and determination of potassium spectroscopically, by F. A. Gooch and T. S. Hart. By dipping platinum coils of different sizes in a solution of the salt to be tested it was found possible to take up known quantities of material for introduction into the volatilizing flame employed. Experimenting in this manner with a single-prism spectroscope, it was found that  $\frac{1}{100}$  of a milligram of potassium produced a line distinctly visible with a slit of 0.18 mm., and  $\frac{1}{1000}$  mgr. with a slit of 0.23 mm. The test appears to be less delicate with potassium sulphate than when the chloride is used, and rather more delicate in the case of the carbonate. The red line of potassium was unmistakably seen when only  $\frac{1}{1000}$  mgr. of potassium was introduced into the flame in the form of the carbonate. For quantitative determinations a standard solution, from which  $\frac{1}{100}$  mgr. of potassium was taken by a certain platinum coil, was employed. The *modus operandi* was to dilute the test-solution until the line given by the potassium contained in a coil-full was of the same brightness as that given by the same quantity of the standard solution. Remarkably consistent results were thus obtained. An interesting point brought out by the experiments is that the presence of sodium salts in the flame is of direct influence in strengthening the spectrum of potassium.—The ultra-violet spectrum of the solar prominences, by George E. Hale. This important paper was read at the last meeting of the British Association, and has been previously noted.—Phonics of auditoriums, by Ephraim Cutter. It is generally known that a well-constructed auditorium resonates certain sounds better than others, and that many clergymen accommodate their tone of speaking to the key-note of their church. Dr. Cutter has made observations on this point in four halls, and recommends those who control auditoriums to find the key-note and post up the result. Thus, an auditorium at Saratoga Springs was tested in 1890, and a notice was put up, "The key-note of this hall is F."—The secular variation of latitude, by George C. Comstock. This is a general account of the observations made at Greenwich, Pulkowa, Madison, and elsewhere, which indicate that the latitude of a single place is subject to a secular variation.—On the capture of comets by planets, especially their capture by Jupiter, by H. A. Newton.—Distribution of titanic oxide upon the surface of the earth, by F. P. Dunnington. An estimation has been made of the titanium in eighty different specimens of soil taken from different parts of the earth's surface. Soils from Virginia gave an average of 1.57 per cent. of titanic oxide, and twenty-two samples from other portions of the United States gave an average of 0.85 per cent. The average proportion in air-dried soils from Oceania and Asia (14 specimens) was 0.90 per cent., and 16 specimens from Europe gave 0.54 per cent. The eight remaining estimations were made on typical rocks of the localities which furnished the samples for analysis.—Notes on a Missouri barite, by C. Luedeking and H. A. Wheeler.—The contraction of molten rock, by C. Barus. A sample of diabase has been fused and allowed to cool slowly. The molten rock contracted regularly until a temperature of 1093° was reached, when the diabase solidified with a sudden contraction of bulk. The density of the original rock was 3.0173, and that of the glass obtained 2.717. The observations indicate that "structural rock texture is due to pressure, *i.e.* pressure induces a redistribution of molecules, such that the smallest specific volume possible under the given conditions may result."—Notes on Michigan minerals, by A. C. Lane, H. F. Keller, and F. F. Sharpless. The minerals considered are chloritoid, grünerite, and riebeckite.

#### SOCIETIES AND ACADEMIES.

##### LONDON.

Royal Society, December 10.—"On a Compensated Air-thermometer." By H. L. Callendar, M.A.

The air-thermometer is the ultimate standard to which all measurements of temperature have to be referred. It therefore becomes a question of considerable importance to determine