Research Items.

The Organism and Environment.—In an article on "The Organism and its Environment" (*Scientific Monthly*, March 1922), Dr. F. B. Sumner emphasises the difficulty of drawing any sharp line between these two categories. Citing as examples the nest of a bird, the tube of a caddis-worm, the shell of a mollusc or a tortoise, the varying fluids and gases which circulate in animals from sponges to fishes or seals, and the many metabolic changes of substances entering or leaving the body, he shows that the distinction between organism and environment must often be difficult or arbitrary. Some of his remarks have a direct bearing on the discussion of biological terminology which has taken place recently in this journal. Thus he says, "Every character has a hereditary basis" and is likewise due to "interaction . . . with the . . . environment." He goes on to say, "The familiar question, Which is the more important, heredity or environment? is not capable of answer when stated in that form"; he points out that the question should be framed on these lines: Are the *differences* between related organisms in any particular case due to *differences* in heredity or to *differences* in environment? When stated in this way it is seen that some characters or differences are primarily due to heredity and some to environment, and the quibble about all characters being equally acquired and equally inherited ceases to be of scientific value.

Studies on Arthropoda.—Dr. H. J. Hansen has issued, "at the expense of the Rask-Örsted Fund," under the title "Studies on Arthropoda, I." (Copenhagen, 1921), three papers—one, illustrated with four plates, on a collection of Pedipalpi, etc., from West Africa, another on the post-embryonic occurrence of the median "dorsal organ" in Crustacea, malacostraca, and a third on stridulation in decapod Crustacea. In this last paper Dr. Hansen has brought together the records of the species of decapods in which stridulating organs are present, and gives an account of two further examples which he has discovered in a species of Ovalipes (one of the Portunidæ) and in Acanthocarpus (family Calappidæ). A stridulating organ consists usually of a regular row of small tubercles or a file-like series of ridges, *e.g.* on the carapace, which can be rubbed by a ridge, or a regular row of tubercles or ridges, or a sharp margin situated on some movable part of a neighbouring appendage. The sound produced by living crabs by means of the stridulating organ has been heard in the case of about half a dozen species. Dr. Hansen points out that a stridulating organ is developed in all species of Ocypoda except one, and in the Indo-Australian *Ocypoda ceratophthalma* one of the two series of ridges is composed of ridges of two sizes, coarse and very fine, so that the tone produced is deep or high, according as the coarse or fine ridges are rubbed. In discussing the use of the stridulating organ Dr. Hansen quotes Col. Alcock's view that this organ serves the crab to give warning to trespassers of its own species about to enter its burrow, but he suggests that some naturalist who has at his disposal living examples of Ocypoda should carry out investigations with the view of elucidating further the use of these organs.

Hygrometry.—The report of the discussion on hygrometry which was held by the Physical Society of London in November last has been issued with the Proceedings of the Society for February 15. It extends to 95 pages and is the most comprehensive publication on the subject which has appeared for many years. For some time one of the principal problems of hygrometry has been to develop a method which would determine, with an accuracy of 1 per cent., the fraction of saturation of air at temperatures below the freezing-point of water. The chemical method of absorbing the moisture is quite satisfactory at ordinary temperatures, but at temperatures below the freezing-point, the weight of moisture present is small and the method becomes difficult owing to the deposition of dew on the weighing tubes and other apparatus used. The dew-point method in its various forms is applicable at all temperatures and has been employed at the National Physical Laboratory as the standard of reference. The wet and dry bulb instrument fails at temperatures below the freezing-point, while the hair hygrometer continues to act although its indications are not always trustworthy. There appear to be some grounds for taking the decrease in length of the hair from its length when saturated as proportional to the logarithm of the relative humidity down to a relative humidity of 10 per cent.

Liquid Inclusions in Glass.—Some interesting experiments on the production of liquid inclusions in glass, made by Mr. Charles E. Benham, are described in the *Geological Magazine* for March. Although liquid inclusions in crystals of sodium chloride, alum, and other salts resemble in many respects those in quartz and exhibit Brownian movement of the more minute enclosed bubbles, there is reason to believe that their origin is not the same. Artificial inclusions approximating more closely to the cavities in minerals were prepared by boiling resin in water tinted with gamboge. Some of the cavities produced contained small quickly moving bubbles, and in others the gamboge particles were in rapid motion. In order to form similar artificial inclusions in glass approximating more nearly to those found naturally in quartz, a small glass tube about 3 inches long and a quarter inch external diameter was partially filled with water and sealed at both ends. It was enclosed within an unbaked brick and submitted to the usual process of firing in a brick kiln at a temperature of about 1200° C. After this treatment the glass was found to contain microscopic liquid inclusions with vapour bubbles comparable with those found in quartz. The experiment was repeated with similar results.

The Atomic Weight of Chlorine.—From the researches of Dr. F. W. Aston it is known that ordinary chlorine, atomic weight 35·46, is a mixture of two isotopes of atomic weights 35 and 37. The constancy of this ratio has been proved by the concordance between the determinations of the atomic weight made in different laboratories. This chlorine, without exception, came from minerals deposited by sea water. There is a possibility that the ratio might not be the same in chlorine arising from primary minerals not deposited from sea water, and this question has been taken up by Mlle. Ellen Gleditsch and B. Samdahl (*Comptes rendus*, March 13). They prepared salt from an apatite (calcium chloro-fluophosphate) found in primary rocks, and after careful purification from fluorine, bromine, and iodine, found the atomic weight of the chlorine to be 35·49, 35·45, 35·46, the same as that of ordinary chlorine. Hence at the time of the formation of the minerals of the primary magma, the two chlorine isotopes were in the same ratio as at the present time.