perature too high for it to assume non-metallic properties.

So that the metallic and non-metallic conditions are simply phases, which all kinds of matter pass through as the temperature increases from zero upwards.

His explanation of osmotic pressure and solubility given in Chapter III. is worthy of note.

There are numerous misprints in the book.

We would end finally by a quotation from the preface and would give warning that the author's speculations are not confined to the preface and the appendices:

In appendix C is discussed from this point of view the habit of alcohol drinking, and it is suggested that it may be the beginning of an organic tendency that will ultimately lead to the elimination of water in living matter, and its replacement by the more mobile alcohol, in order that as the temperature of the earth and sun falls the aqueous fluid in living matter may be replaced by alcoholic fluids which will remain liquid under conditions which convert water into a solid state.

It is indeed a very curious fact, which has never been adequately explained, that men seem almost instinctively to avoid the use of pure water as a beverage. They drink either tea, beer or alcoholic liquids, but only water when they are either very thirsty or when other liquids can not be obtained. There must be some scientific cause underlying this tendency, and I think that appendix C opens out a very curious possibility as to what this tendency may ultimately lead to.

J. E. MILLS

SCIENTIFIC JOURNALS AND ARTICLES

The Journal of Experimental Zoology, Vol. IV., No. 2 (June, 1907), contains the following papers: "The Influences of External Factors, Chemical and Physical, on the Development of *Fundulus heteroclitus*," by Chas. R. Stockard. The eggs of *Fundulus* were found to produce definite types of embryos when treated with various salt solutions. The most striking type being the one-eyed monsters resulting from the use of sea-water solutions of $MgCl_2$. Osmotic pressures resulting from the use of sugar solution affected the eggs much more violently when they were being developed in fresh water than in sea-water. The effects of a weak salt solution are augmented by the addition of sugar to the solution. The embryos develop in a perfectly normal manner entirely out of water if kept in a moist amosphere, though they are unable to hatch unless put into water; then they very promptly break through the egg membrane and swim away. "Movement and Problem Solving in *Ophiura brevispina*," by O. C. Glaser. "*O. brevispina* moves in practically all of the ways possible for a pentaradiate animal; exhibits no sign of improvement from practise in the performance of the righting reaction or of freeing its arms of encumbrances. The behavior, in spite of its complexity, can not be considered a sign of intelligence." "Occurrence of a Sport in *Melasoma (Lina) scripta* and its Behavior in Heredity," by Isabel McCracken. "In this paper the author records the results of a breeding experiment carried through a series of seven generations, under controlled conditions of a dichromatic species of beetle in which a "sport" is of occasional occurrence. The results show that the sport, although inherently stable, as evidenced by its breeding true through selection, is entirely dominated by each of the dichromatic extremes of the species in a first cross, and is gradually eliminated from the lineage of each of these in successive crosses. "The Energy of Segmentation," by E. G. Spaulding. The paper presents the application, by means of experimental methods, and not simply as a postulate, as has heretofore been the case, of the first and second laws of thermodynamics in their generalized form to the event of segmentation. These methods were "compensation" methods; cleavage, in sea-urchin eggs, was inhibited by means of osmotic pressure, and from the values thus obtained and with volumes and surfaces known the energy-change was computed. The conclusion is reached, that, with these laws valid for the organic as well as the inorganic realm, these two realms fall as species within the same "natural classification" in which the principles stated by the two laws form the highest genus. "Experiments in Transplanting Limbs and their Bearing upon the

Problems of the Development of Nerves," by Ross Granville Harrison. When the rudiment of the limb of a tadpole is transplanted it acquires after a time nerves which are connected with the nerves of the region of implantation. The nerves have the same arrangement and distribution as those of the limb in its natural position. This is the case even in limbs taken from individuals which have undergone their development after having been deprived of their nervous system and also in the accessory limbs which sometimes bud out from the transplanted appendages. The nerves in question are not preformed in the transplanted limb but they actually grow into it, their mode of distribution being determined by the structures within the latter. The development of an embryonic nerve ceases and degeneration sets in as soon as the connection with its ganglion is severed.

SOCIETIES AND ACADEMIES

THE GEOLOGICAL SOCIETY OF WASHINGTON

The 193d meeting of the society was held on May 8, 1907, Vice-president Campbell in the chair and sixty-two members present. Under the head of informal communications Mr. F. E. Wright exhibited artificial crystals of silver, copper and diopside produced under various conditions in the Geophysical Laboratory of the Carnegie Institution of Washington and discussed briefly the bearing of the different modes of formation on the general theory of the precipitation of native copper and silver ores. Mr. Lawrence La Forge exhibited a new orthorhombic pyroxene found in a slag at Bingham, Utah. Although this mineral was found by Mr. Wirt Tassin, of the National Museum, to have the chemical composition of a normal calcium iron pyroxene, crystallographically it was found by Mr. La Forge to be orthorhombic but with the same prism angle within the limits of error as ordinary monoclinic pyroxene. Six different crystal forms in all were observed, the prevailing habit being that of an elongated square prism, termination either by the base or by an oscillatory combination of the base and a bracydome. An attempt was made to determine the optical constants but was unsuccessful because of the dark color of the mineral and shattered condition of even very small crystals. Two sections, however, were ground thin enough to determine the extinction, which was found to be parallel and the orthorhombic character thus confirmed.

Regular Program

The New Map of the Yosemite Valley: F. E. Matthes.

This topographic sheet of the U. S. Geological Survey, about to be published, affords a particularly instructive example of modern detail mapping, in that it suggests possible criteria for the guidance of the topographer in the construction of maps which shall embody a scientific interpretation of the relief.

The value of a map as a means of representing land forms depends upon two factors: selection of scale and contour interval, and ability on the part of the map maker to express topographic character. The latter prerequisite will not be considered in this discussion. Thus far the factors which have been determinative in the selection of proper scale and contour interval have, as a rule, been: purpose for which the map is made; degree of cultural development of region mapped; cost per square unit; funds available, etc. Definite physiographic criteria have not yet been considered in this connection although the present state of physiographic knowledge is such that the attempt to apply physiographic principles to the mapping of land forms seems opportune and justified. Most topographic maps give little more than an imperfect, incomplete picture of the relief. Others again are overburdened with unnecessary, irrelevant details. Some actually amount to misrepresentations, even though they be the product of sincere and painstaking effort. The topographer is to-day and always has been more or less uncertain as to the matter of detail. Both in the selection of scale and contour interval, and in the actual field sketching he is at a loss to decide which of the smaller topographic units he must show, and which he must leave