

two sides are symmetrical, but in the position, distribution, number and minor details of the branches from the 'lateral' and 'main' canals there is considerable variation. In none of the several hundred specimens examined were these branches grouped as described and figured by Collinge. In all cases they were found all along the 'lateral' canal, the great majority being ventral to the canal. As a rule, one to three at the anterior end of each system begin on the ventral side of the canal and, after running a short distance in that direction, turn dorsalward and terminate in the usual branchlets and clusters of sense organs on the dorsal side of the canal.

The points made were demonstrated with dried skins of the fish upon which the systems had been painted over with white paint, and photographs of similarly prepared skins.

Conditions of Fossilization: J. CULVER HARTZELL. (Read by title only.)

Professor Hartzell's paper was a review of a series of investigations he has been making, the objective point of which is to find the laws (?) governing the conditions of fossilization for the various classes of Invertebrates in the same and in different formations.

Before the laws desired can be formulated, it is necessary (a) to know the mineral composition of the skeletal parts of living invertebrates; (b) to know the condition of the fossil, *i. e.*, whether it be the original, a mold or a cast; (c) to know the mineral composition of the fossil; (d) to know what mineral change has taken place during fossilization where the cast is one by molecular replacement; (e) to know the lithological composition of the formations in which fossils occur; (f) to know the relationship between the fossil and the formation.

The conversion of an organism into a fossil depends upon the character of its skeletal parts, the material in which it is buried and the material brought in in solution by infiltration. The material of which the skeletal parts is composed varies in different groups, being more durable in some than in others and therefore plays an important part in the preservation of the organism. The variation in the lithological character of the material in which the organism is buried also plays an important part. Certain organisms are preserved as originals, others as molds and casts, in the same formation, and locality. In this same formation, but in a locality of different lithological character, those groups which were lost under the former condition may be retained under the latter, and *vice versa*.

So far, twenty-five horizons and forty-four localities in the United States, Canada, England and Germany have been examined with special reference to the lithological character of each formation at the various localities and the conditions of preservation of the fossils. Tables have been prepared giving the general mineral character of the skeletal parts of living invertebrates, minerals replacing original minerals secreted by the organisms, and a comparative table showing the mineral composition of living and fossil invertebrates.

The paper was illustrated by means of photographs, drawings and models.

Origin and Migration of the Germ-Cells in Squalus Acanthias: FREDERICK ADAMS WOODS.

The germ-cells in this form are not derived from the germinal epithelium of the body cavity, as is commonly taught, but are traceable before the mesoderm has split to form the coelom, and in a region that may be called extra-embryonic.

In the earliest stages in which they can be distinguished from body cells they all lie in two little round groups under the blastodermic rim in the posterior part of the embryo, and just at the junction of the three germ layers as well as in the endoderm itself.

During the growth of the embryo these clusters move inward from each side towards the median line. (Embryo of 3 mm.)

The cells then become separated from each other and are scattered in the unsplit mesoderm, though none are yet to be found in the segmented portion of the middle germ layer.

When the mesoderm splits, nearly all succeed in getting on the median or splanchnic side of the body cavity which is then formed.

From this time up to the period of sexual differentiation (embryo of 28 mm.) these cells migrate relatively to the other tissues so that they progressively lie just beneath, at the side of and then dorsalward to the intestinal tract. They then make their way through the mesentery in which most of the cells are found (embryos of about 11 mm.), and finally reach their destination in the epithelium of the genital gland.

During no part of this process are germ-cells ever derived from mesoderm cells, nor do they ever go into the formation of any part of the body.

They retain their yolk and other characteristics of the cells of the early blastoderm stage and it is the body-cells, not the germ-cells, that are differentiated.

Thus the hypothesis of Naussbaum that 'sex cells do not come from any cells that have given up their embryonic character or gone into building any part of the body, nor do sexual cells ever go into body formation,' finds a confirmation in facts.

Histological Changes in the Regeneration following Normal Fission of Planaria maculata: W. C. CURTIS. (Read by title only.)

Variation in the Hepatic Ducts of the Cat: R. H. JOHNSON. (Read by title only.)

An Electric Lamp for Microscope Illumination: MAYNARD M. METCALF. (By title.)
Will be published in full in SCIENCE.

M. M. METCALF,
Secretary.

AMERICAN PHILOSOPHICAL ASSOCIATION.

THE American Philosophical Association held its first meeting at Columbia University, New York, on Monday and Tuesday, March 31 and April 1, 1902. The Association may be regarded as a daughter of the American Psychological Association, to which fully three fourths of its nearly one hundred charter members also belong. For several years past the Psychological Association has provided for the reading of papers in general philosophy at its meetings by philosophical sections. This arrangement generously met a practical demand, but the relation was anomalous. The desire for more adequate recognition of the philosophical interests was met by the organization of the new Association at a conference held last November in New York. Professor J. E. Creighton (Cornell), editor of the *Philosophical Review*, was chosen president, Professor A. T. Ormond (Princeton), vice-president, Professor H. N. Gardiner (Smith), secretary-treasurer, and these, together with Professors Armstrong (Wesleyan), Duncan (Yale), Everett (Brown) and Hibben (Princeton), were constituted an executive committee to invite others to membership, to draw up a constitution and to arrange for the first meeting. The constitution adopted at the recent meeting defines the