the ordinal number of series and the philosophical concept of the formal structure of an ideally completed self. I have maintained that this formal identity throws light upon problems which have as genuine an interest for the student of the philosophy of religion as for the logician of arithmetic. In the same connection it may be remarked that, as Couturat and Russell, amongst other writers, have very clearly and beautifully shown, the argument of the Kantian mathematical antinomies needs to be explicitly and totally revised in the light of Cantor's modern theory of infinite collections. To pass at once to another, and a very different instance: The modern mathematical conceptions of what is called group theory have already received very wide and significant applications, and promise to bring into unity regions of research which, until recently, appeared to have little or nothing to do with one another. Quite lately, however, there are signs that group theory will soon prove to be of importance for the definition of some of the fundamental concepts of that most refractory branch of philosophical inquiry, esthetics. Dr. Emch, in an important paper in the *Monist,* called attention, some time since, to the symmetry groups to which certain esthetically pleasing forms belong, and endeavored to point out the empirical relations between these groups and the esthetic effects in question. The grounds for such a connection between the groups in question and the observed esthetic effects, seemed, in the paper of Dr. Emch to be left largely in the dark. But certain papers recently published in the country by Miss Ethel Puffer, bearing upon the psychology of the beautiful (although the author has approached the subject without being in the least consciously influenced, as I understand, by the conceptions of the mathematical group theory), still actually lead, if I correctly grasp the writer's meaning, to the doctrine that the esthetic object, viewed as a psychological whole, must possess a structure closely, if not precisely, equivalent to the ideal structure of what the mathematician calls a group. I myself have no authority regarding esthetic concepts, and speak subject to correction. But the unexpected, and in case of Miss Puffer's research, quite unintended, appearance of group theory in recent esthetic analysis is to me an impressive instance of the use of relatively new mathematical conceptions in philosophical regions which *seem,* at first sight, very remote from mathematics.

That both the group concept and the concept of the self just suggested are sure to have also a wide application in the ethics of the future, I am myself well convinced. In fact, no branch of philosophy is without close relations to all such studies of fundamental categories.

These are but hints and examples. They suffice, I hope, to show that the workers in this division have deep common interests, and will do well, in future, to study the arts of cooperation, and to regard one another's progress with a watchful and cordial sympathy. In a word: Our common problem is the theory of the categories. That problem can be solved only by the cooperation of the mathematicians and of the philosophers.

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SCIENTIFIC BOOKS.

The Harriman Alaska Expedition. Vol. X. Crustaceans. By Mary J. Rathbun, Harriet Richardson, S. J. Holmes and Leon J. Cole. New York, Doubleday, Page and Co. 1904. Pp. x + 337. 8vo; with xxvi plates and 128 figures in the text.

In working out the shrimps of the Harriman expedition Miss Rathbun was obliged to review the entire material of that group from northwest America which had accumulated in the National Museum and, in addition to the

results of that study, has provided a check list of the Decapoda inhabiting the coast from southern California northward. An effort has been made to figure all the less known species. When it is considered that the basis of this study includes the rich collections of the U. S. Fish Commission from Lower California to the Arctic; the extensive explorations on the Alaskan coast and the Aleutian islands made by Dall; and the fruit of lesser researches by a large number of collectors and students, including Stimpson, Lockington and Holmes—in all some 50,000 specimens—it can be realized how extensive and valuable an addition to our knowledge of the Crustacea of the north Pacific is embraced in Miss Rathbun's painstaking memoir.

The decapod fauna of the north Pacific is rich in individuals if not in species. Certain types were found in especial profusion, such as the shrimps belonging to the Pandalidæ, Hippolytidæ and Crangonidæ, the hermit crabs, the maioid spider crabs and the Lithodidæ or anomouran spider crabs. The Pandalidæ take the lead in numbers. The most abundant species are *Pandalus borealis* and a subspecies of the Atlantic *P. montagui,* boreal forms which extend southward from the Arctic into both oceans, but seem to find the most favorable environment in the Pacific.

In number of species the genus *Spirontocaris* of the Hippolytidæ is unsurpassed, being represented in the north Pacific by fifty-one species exhibiting great diversity of form, several of which are also common to the Atlantic. Like *Pandalus,* it is essentially a boreal group. The Crangonidæ also occur in great numbers and include thirty-two different forms, mostly restricted to the Pacific. The hermit crabs are also very abundant and to some extent rather local, occurring in their finest development in a special region, outside of which these species are often rare and stunted.

In their distribution many of the Arctic forms continue southward on either shore to the Kurile Islands, on the one hand, or Puget Sound, etc., on the other. As with the mollusks, fishes and marine mammals, the winter line of floating ice in Bering Sea determines the northern limit of many forms. While many species run without interruption from this limit south to California, the distribution of others indicates the possible division of the fauna geographically into subfaunæ, points of limitation being indicated near Kadiak, Fuca Strait and Monterey, California. Some Bering Sea species occur sporadically in the cold waters of glacier-fed bays in southeastern Alaska, where they are, perhaps, relics of that glacial time when the immediate waters of the whole coast were much colder than at present. A few Japanese species also appear sporadically in analogous latitudes on the American coast, without, so far as known, inhabiting the intervening region. The archibenthal species, as was to be expected, have a greater range than those restricted to the more variable environment of the shallow waters of the coast.

The memoir is abundantly illustrated and will be of permanent value to all interested in the natural history of the Crustacea.

Dr. Richardson's paper includes a list of the isopods collected by the Harriman expedition, together with others obtained on the Californian coast by Professor W. E. Ritter. In all, twenty-one species are enumerated, of which five are regarded as new, while the doubtful *Idotea gracillima* is reidentified, figured and redescribed. A *Munna* was taken at the Pribiloff Islands in a state too mutilated to describe, but the presence of a species of this family heretofore unknown from the Pacific coast is a fact of interest.

Dr. Holmes describes six new amphipods and enumerates sixteen others from the collections of the Harriman expedition, most of which are well illustrated, but it is probable that a complete collection would considerably increase this number, these animals being remarkably abundant on the Alaskan coast.

The remainder of the volume is devoted to a report on the littoral Pycnogonidæ of the west coast of North America by Mr. Cole. This covers a field almost entirely new to the literature. Twelve species are described and profusely illustrated, of which one is circumpolar and two others are probably evolved from circumpolar types. The list simply in-

dicates a beginning, as there is an almost unexplored gap between northern California and Prince William Sound, while among the Aleutian Islands pycnogonids are rather abundant, and would probably, on thorough exploration, add considerably to the number of four species now known from that region.

The book concludes with an excellent index and well sustains the high reputation which the earlier volumes of this important series have maintained.

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Chemie der Eiweisskörper. Von Dr. Otto Cohnheim, A. o. Professor an der Universität Heidelberg. Zweite vollständig neu bearbeitete Auflage. Braunschweig, F. Vieweg und Sohn. 1904.

The first edition of Cohnheim's 'Chemie der Eiweisskörper,' published in 1900, speedily gained a wide circulation among physiological chemists and won for itself a place as a most useful book of reference. No other comprehensive and satisfactory compilation of the literature on proteids had been attempted since Drechsel's article in Ladenburg's 'Handwörterbuch,' published in 1885. The appearance of a new edition by Cohnheim, so completely revised in some parts that it almost deserves to be called a new book, testifies the popularity which the work has enjoyed and above all the rapid progress which the study of proteid chemistry has made in this brief period of four years. An era of classification in which new proteids were isolated and their physical and chemical properties investigated, has been followed by renewed interest in the chemical structure of the albuminous substances. The recent fruitful researches of Emil Fischer, Kossel and others bear witness to the advances which improved methods of study can inaugurate. Accordingly, we find in the new volume an entire chapter devoted to the chemical constitution of the proteids. This, as well as other parts of the book, is characterized not only by the completeness and accuracy of the list of references to the literature, including the earlier pioneer work, but also by the exercise of critique in the presentation of such detailed data. It is this selective and unbiased treatment which makes a compilation readable.

Without attempting any detailed review, it may be of interest to refer to some of the more noteworthy changes or innovations in the present edition. The molecular structure characteristic of the proteids and serving to define them is summarized in the following words:

> Die wichtigste Gruppierung ist nun sicher die oben besprochene Säureamidbindung der α-Amidosäuren, und man kann daraufhin Körper wie das Glycylglycin und seine Homologen als die einfachste Eiweisskörper bezeichnen. Richtiger ist es aber wohl, Kossel zu folgen, und auch die zweite Verbindungsform, wie sie im Arginin vorliegt, als notwendig für den Eiweissbegriff anzusehen. Danach hat man als Eiweisskörper Säureamide aus α-Amidosäuren zu bezeichnen, von denen eine das Arginin ist.
>
> Unter diese Definition fallen zweifellos alle Peptone und auch die komplizierteren Peptide, ebenso die Protamine, deren Abtrennung von den Eiweisskörpern bei den breiten chemischen und genetischen Übergangen zwischen ihnen und den anderen Eiweisskörpern durchaus willkurlich erscheint. Die von Löw und Hofmeister versuchte Heranziehung des physiologischen Elementes hat bei einer chemischen Definition Bedenken und ist unzulässig, seit es wahrscheinlich geworden ist, dass der Tierkörper sein Eiweiss aus allen stickstoffhaltigen Verbindungen aufbauen kann, die für seine Fermente zugänglich sind (p. 71).

The discussion of the physical and physico-chemical properties of proteids has been modified to conform with changing ideas. This is especially evident in Chapter V. in the treatment of the salt-like compounds of the proteids. The twofold behavior of the latter towards acids and bases, assigned in the earlier edition to their character as pseudo-acid and pseudo-base (Hantzsch), has given way to a somewhat different interpretation. The unique combining properties of the proteids are now attributed by the author to the amido-acid complexes which form the molecule, since simple amido-acids are known to show precisely similar reactions. In the classification of the proteids no notable change is introduced. Casein is still referred to under the most unsuitable designation of nucleoalbumin, not, however, without at length indicating its specific character as a phosphorus-containing