But, even admitting these points, it would be a great mistake to dismiss the work thereupon. Its account of the progress of science, and of the resultant transformations wrought upon mediæval beliefs and whimsical suppositions, is very well done. Nay more, it marks a distinct advance over nearly all statements of the kind known to me. A few passages, culled at random, serve to prove this clearly: "The belief that the writers of the Bible were under the special influence and guidance of the Divine Spirit is a very different thing from the belief that their opinions were always just, their arguments always conclusive, or their knowledge of the facts always accurate" (p. 85). "We have come to regard as the main function of prophecy, not the construction of a map of all future history with symbols and names in cipher, but the presentation of warnings, consolations and moral exhortations, to reform or confirm the religious faith and life of the people addressed" (p. 106). "The conclusion which seems forced upon us is that no reconciliation between the geological record and that of Genesis is possible" (p. 111). "Apart from the dogma of the inerrancy of the Bible, the question of the date of the origin of man has obviously no theological significance whatsoever" (p. 117). "Wallace announced many years ago the remarkable proposition, that 'every species has come into existence coincident both in space and time with a preexisting closely allied species.' It would be impossible actually to prove that proposition in regard to every known species, since our knowledge of extinct life is so far from being complete. Nevertheless, the proposition can be shown to be true in so many instances that there is no reasonable doubt that it is to be accepted as a universal law. * * * The cumulative force of that evidence reveals itself only in prolonged study of some one or other of the departments of biology" (pp. 194–5, 198). "The theory of evolution is indeed the implacable foe of that sort of theistic philosophy which has been happily satirized in the phrase, 'the carpenter God'" (p. 254). "I can not escape the conviction that the tendency of evolutionary thought is decidedly towards monism" (p. 268). "It is difficult to see why that parallelism of ontogeny and phylogeny does not have the same significance in regard to psychical as in regard to physical characteristics" (p. 272). "The alternatives for the philosophical thinker seem to be dualism and monism, but with a third alternative of suspended judgment—agnosticism" (p. 275). "Neither volition nor any other mental state has a quantitative relation to physical energy. The recognition of the absolute disparateness of the two classes of phenomena is essential to sound thinking in regard to them" (p. 296). "The things which we can not predict we can pray for. The things which we can predict we can not pray for" (p. 346). "It is needless to say that no claim of certainty can be maintained in regard to Christianity as a system, or in regard to any particular doctrine of Christianity" (p. 406). All this is pretty well. These views, and others like them, are decidedly symptomatic.

Part I., which deals with science and its advance, will be of great service to many. Parts II. and III., which contain the philosophical, theological and religious considerations, can not be ranked in the same class. They are immensely weakened by absence of a transitive grasp upon first principles and, therefore, on the whole, they never really face the ultimate question, What are we *compelled* to infer to-day from man's knowledge of the physical universe, of the physiological body, and of the psychological organization? Yet, even at this, the book must be strongly commended to thousands who have hitherto been fed on mush, discreditable to its cooks and positively harmful to its consumers. For many babes Dr. Rice may prove strong meat, indeed. And from this point of view, his work deserves hearty recognition as a valuable installment, likely to carry advantageous weight in certain quarters.

R. M. W.

SOCIETIES AND ACADEMIES.

THE NEW YORK ACADEMY OF SCIENCES.
SECTION OF ANTHROPOLOGY AND PSYCHOLOGY.

THE regular meeting of the section was held April 25 at the American Museum of Natural

History in conjunction with the American Ethnological Society. The program was as follows:

Notes on an Algonkin Dialect: Dr. WM. JONES.

Dr. Jones presented a brief report on the method of word-formation of the Fox dialect. The dialect is Algonkin and belongs to the group now inhabiting, or that once inhabited, the country contiguous to Lake Huron, Lake Michigan and Lake Superior. Among the other dialects of the group are Ojibway, Ottawa, Pottawatomi, Menomonie, Kickapoo and Sauk. Morphologically all these dialects stand in an intimate relation with one another. The absolute forms of much of the vocabulary are the same, but varying differences in the way of intonation, articulation and grammar make some of the dialects seem somewhat removed from one another. Fox is nearest to Sauk and Kickapoo and farther removed from Ojibway.

The structural peculiarities of word-building as shown in the Fox would come out much the same in the other related dialects. The system of forming words is by composition. The elements entering into composition are formatives and stems. Some formatives are prefixes but most are suffixes. Some of the suffixes refer to the pronoun and gender in the same form. Stems fall into two general classes, initial and secondary. Initial stems come first in a combination and secondary stems come after. Secondary stems can be subdivided into at least two groups, one of a first order and another of a second order; the former stand next to initial stems, and the latter, when in composition, stand next to terminal pronouns.

The stems refer to general notions. Initial stems usually express subjective states and secondary stems generally refer to objective relations. The meaning of one stem modifies the meaning of another in a reciprocal manner with the result of greater specialization. Initial stems have greater extension and can often occur alone as adverbs.

A number of particles precede the terminal pronouns. The particles refer to causal relations. Some have the special office of instrumentality, as with the hand, foot, mouth, voice and ear.

The dialect makes a distinction between two opposing categories. Objects that have life and movement come in one class and objects without those attributes fall in another. The distinction is maintained with great vigor throughout the dialect; a force like personification sometimes interferes with it.

On the Growth of Children: Professor FRANZ BOAS and Dr. CLARK WISSLER.

Professor Franz Boas and Dr. Clark Wissler presented a joint paper on the growth of children, in which they discussed the causes of the increased variability during the period of growth. As the results of previous investigations, it had been suggested that the increased variability may be due to differences in the rapidity of development. The authors have followed out this line of investigation by collecting material regarding the variability of the period at which certain physiological changes take place. The times of dentition, the beginning of puberty, the appearance of the wisdom teeth, and the beginning of senility were selected for this purpose, and it was shown that the variability of time at which these phenomena take place increases with increasing age, and apparently the rate of increase of the variability is proportional to the age. Furthermore, it was shown that during the period of growth all the coefficients of correlation between the sizes of different parts of the body are increased. This can also be best explained by the theory that the phenomena of growth are largely due to acceleration and retardation.

Paper-making Implements of Ancient Mexico (with demonstration of specimens): Professor MARSHALL H. SAVILLE.

The Grammar of the Yukaghir Language: Mr. WALDEMAR JOCHELSON.

The paper reported the result of several years' study of the Yukaghir language, being mainly a sketch of the Kolyma dialect. There are two dialects in the language,—the Tundra dialect, and the Kolyma dialect. The phonetic and morphological peculiarities of the former are rather insignificant, but the Tundra dia-

lect has absorbed a considerable number of Tungus stems, which in their use in word-formation have been subjected to the rules of the Yukaghir grammar. These investigations show that the Yukaghir language stands isolated from the Siberian languages of the so-called Ural-Altaic group, and that it has many similarities to the languages of the American Indians.

The chief phonetic and morphological differences that distinguish the Yukaghir language from Ural-Altaic languages are the following: (1) It has not the intricate system of vowel harmony that is found in Ural-Altaic languages; (2) we do not find that the vowel of the root is unchangeable—an important rule in Ural-Altaic phonetics; (3) the Ural-Altaic possessive suffixes of nouns and verbs are wholly absent in Yukaghir verbs, and present in nouns only for the purpose of expressing ownership of the third person; (4) words are formed by means of suffixes and prefixes, while the Ural-Altaic languages use suffixes only.

The chief points of similarity between the Yukaghir language and Indian languages are: (1) The existence of a simple harmonic law in the use of vowels; (2) the use of prefixes; (3) adjectives are morphologically identical with verbal forms; (4) the verb-bases are mostly stems consisting of a single vowel or a small group of consonants, while the noun-bases are almost always derivatives of verbal forms; (5) the conjugation of transitive verbs is clearly distinguished from that of intransitive verbs; (6) transitive verbs may be changed into intransitive verbs by means of suffixes, and *vice versa;* (7) we find in the Yukaghir language the 'polysynthesis' of the American languages; (8) although there is not the actual 'incorporation' of the American languages, the syntactical construction of the Yukaghir sentence is akin to it.

James E. Lough,
Secretary.

Discussion and Correspondence.

A flying machine in the army.

To the Editor of Science: In recent numbers of various journals, much has aptly been said about flying machines, balloons, aeroplanes, kites, aerodromes and mechanical means for navigating the air, with historical data, giving credit where credit is due and naming several of the great thinkers of the age and what they have done in this direction, with hints for the future, but not a word of what the army has done seems to have been printed.

For ages commanders in the field have desired to know what the enemy was doing. Hence the use of captive balloons and the wish to make them dirigible; and when the Astronomer General Mitchell commanded at Port Royal during the civil war, the matter was discussed with his chief engineer officer, who brought forward the proposition to make a *machine* without inflation, and exhibited a tin model that wound up with a string and a handle and spun like a humming top and would fly into the air a hundred feet or more, vertically, according to the force exerted upon it, and would carry a bullet or two if the string was pulled hard enough. From this little toy which was a circular disc of tin, so cut and bent as to make a fan-screw wheel, it was argued that with power enough, if it could be had within the necessary limit of weight, such fan propellers could be made and combined as to lift an observer into the air and by other horizontal propellers could be driven through the air, and by making one on a horizontal shaft so that the direction of its axis could be changed at will, the machine could be steered.

That it must have power to be driven faster than the wind moves was apparent or the wind would take it as it does a balloon. At that time balloons were very simple. No one had made progress in directing their flight.

Mitchell was a mechanician as well as a mathematician, and was proud of being able to measure the one ten-thousandth of an inch accurately, and he concluded that it would be well to consider the problem of air navigation without gas bags. But the yellow fever claimed him, and for a long time no more was done in that direction at department headquarters.

The Tenth Army Corps had a captive balloon, but it was of little use, except to excite