

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

THE regular meeting of the section was held January 26, in conjunction with the American Ethnological Association, Professor Thorndike presiding. The first paper was presented by Dr. Maurice Fishberg, 'The Ancient Semites and the Modern Jews.' The somatic characteristics of the ancient and the modern Semites were discussed in detail, the purest representatives of the latter being the Arabian Bedouins. Their anthropological type is distinctly African. The bas-reliefs of the ancient Semites, as represented on the Assyrian and Egyptian monuments, are of the same type. The modern Jews are, on the other hand, a distinctly Asiatic type physically; they are brachycephalic—cephalic index 82 with less than five per cent. of heads having an index of 75 or less. Their head form shows very little variability, but one important feature is that in countries where the non-Jewish population is round-headed the Jews are also round-headed. In Caucasia their cephalic index is 87; in eastern Europe, where the cephalic index of the non-Jews ranges between 80 and 84, that of the Jews is about the same. In Africa, among the long-headed Gentile population, the Jews are also dolichocephalic. The same is observed to be the case with stature. The Jews are taller in countries where the general population is tall. The type of the Jew is dark, but 12 per cent. of pure-blood types, having fair hair and blue eyes, are to be found. The nose of the modern Jew, is not as frequently hooked as is generally supposed. Statistics show that only 12 per cent. are of this variety. The only characteristic which often betrays a Jew is the 'Ghetto eye.' But such Jews who have lived outside of the pale of the Ghetto for a few generations do not present this phenomenon. Physically there are two types of Jews—one derived from Asia, commonly called *Ashkenasim*, and constituting more than 90 per cent. of the modern Jewry. It has no relation at all with the second type, of African origin, commonly referred to as *Sephardim*. These, constituting less than 10 per cent. of the Jews, alone are more or

less related to the ancient Semites, although they have not everywhere preserved themselves as pure as in Africa. Besides these there are to be discerned other subtypes, in which Teutonic, Slavonic and Mongolian blood appears most prominent. From the standpoint of physical anthropology, the view that all the modern Jews are descendants of Abraham, Isaac and Jacob, can not be seriously considered. The only thing which binds the modern Jews together is their religion. In blood there is no more relation between the Jews than there is between the people who profess the protestant, methodist or unitarian religion.

Mr. H. H. St. Clair, 2d, then read a paper, 'Investigations among the Comanche and Ute Indians.' The investigations were made during the summer of 1902 upon the Comanches on the Kiowa-Comanche Reservation, Oklahoma, and the Utes of the Uintah Reservation, Utah. Both tribes belong to the great Shoshonean family. These tribes have a very loose social organization and no elaborate religious ceremonial. There are no calendar-records nor any traces of heraldry among the Comanches. The designs painted on rawhide bags or woven in beads have no meaning as with the Shoshones, but are merely ornamental, and there is lack of the symbolic conversationalism found among such people as the Arapahoes and Sioux. In their stories the coyote figures as the most frequent character representing the fool and schemer. There are striking similarities between the Shoshone and Nahuatl languages of Mexico, each using the same grammatical processes in its pronoun, noun, preposition and verb, and the order of words and structure of the sentence being practically the same in both.

JAMES E. LOUGH,  
Secretary.

## DISCUSSION AND CORRESPONDENCE.

## THERMODYNAMICS OF HEAT-ENGINES.

TO THE EDITOR OF SCIENCE: In undertaking to express to you, and through your columns to Dr. Thurston, my appreciation of his very generous review of my 'Thermodynamics of Heat-engines,' will you allow me to call at-

tention to one fundamental point in my position which the latter failed to grasp upon first reading.

Dr. Thurston quotes me in the following words: "The much-discussed 'Second Law of Thermodynamics' takes the form: 'The entropy of the world tends to a maximum and the temperature to a minimum.' It is, however, pointed out, etc."

These words are correctly quoted (page 35), but their significance has been directly reversed by omission of the context. The statement of the second law just quoted is given by me as itself a quotation of its heretofore accepted form, for direct contrast with my own statement of it, which will be found (on pages 25 and 35, with elaboration and explanation in the intervening pages) in words which may be condensed into the following, for present purposes:

"That while any given quantity of energy tends, so long as it exists without transformation, to fall in intensity, and never the reverse, *yet* the secondary form of energy into which that quantity may at any time find itself transformed possesses a degree of intensity which is *entirely independent of that of the original quantity*, and which is *the maximum permitted by circumstance*. In other words, energy tends downward in intensity during untransformed existence and upward during transformation."

This necessarily denies *in toto* the doctrine of the dissipation of energy. It affirms, on the contrary, that as much exaltation of energy is constantly going on as there is of depression of energy. In short, the total fund of intensity or availability of the energy of the universe is as constant as is the universe's total fund of mass, or as is its total fund of the product of the two, energy itself.

The availability of the energy of the solar system is, of course, being steadily dissipated. But progress in astronomy has generations ago passed the point when observations confined to the solar system suffice for the establishment of fundamental principles such as these.

The new statement of the second law takes on especial importance as being, if true, one

link in the chain of evidence confirming the unity of the universe, the modern idea of which was so interestingly referred to recently by Professor Newcomb. The doctrine of the dissipation of energy necessarily excluded any possibility either of the universe being infinite and eternal in its extent or of its being one with the solar system. The new statement not only is consistent with those ideas, but it is implied by or implies them, whichever end of the sequence the thinker may prefer to regard as the natural origin.

SIDNEY A. REEVE.

#### THE JUDITH RIVER BEDS.

THE reader of Professor Osborn's recent note in SCIENCE on the 'Age of the Typical Judith River Beds' would be led to infer that I had either denied or questioned the Upper Cretaceous age of these beds. Since this note places me in an entirely false position on this question, I wish to offer the following brief remarks by way of explanation.

1. I have never even so much as questioned the Upper Cretaceous age of the Judith River beds. The point I raised was as to their stratigraphic position within the Upper Cretaceous relative to the Pierre.

2. Osborn's statement that since Cope, Cross, White and Dana have referred these beds to the Upper Cretaceous, they therefore overlie the Pierre is unwarranted, since these authorities and American geologists generally have heretofore included everything from the Dakota to the Laramie in the Upper Cretaceous. Would Professor Osborn place the Dakota, Benton and Niobrara above the Pierre because those same authorities have referred these deposits to the Upper Cretaceous?

3. All who are familiar with the literature on this subject know that the Judith River beds have been referred to different ages by Hayden, Meek, Leidy, Cope, Marsh, White, Stanton, Cross, Lesquereux, Newberry and others, varying from Lower Tertiary on the one hand, to Lower Cretaceous or Upper Jurassic (Wealden) on the other, and that, therefore, Osborn has *not* 'abundant authority for the statement that among geologists of the United States there has never been any ques-