An inherently stable machine striking a head gust of J feet per second soars to altitude of about $4\frac{1}{2}$ J feet above its initial level and, after executing oscillations, remains about $3\frac{1}{2}$ J feet above the original level.

9. *Terms of Relationship and Social Organization:* TRUMAN MICHELSON, Bureau of American Ethnology, Washington, D. C.

From the point of view of Algonquian tribes terms of relationship are linguistic and disseminative phenomena, though in other cases they may be primarily psychological and sociological.

Report of the Annual Meeting: Prepared by the Home Secretary.

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SPECIAL ARTICLES

THE SCALES OF THE GONORHYNCHID FISHES

THE Gonorhynchidæ constitute a small family of very peculiar marine fishes of elongate form, found in the seas about Japan, Australia and South Africa. In the Eocene deposits of Wyoming is a fish which Cope named *Notogoneus osculus,* considered to belong to the Gonorhynchidæ. Whitfield in 1890[1] gave an account of a specimen of this species, and expressed the opinion that it belonged in the vicinity of the suckers, or Catostomidæ. It seemed remarkable that a fish from a fresh or brackish water deposit in Wyoming should be referred to a rare marine family of a remote region of the earth; and the scales of *Notogoneus,* admirably figured by Whitfield, did not at all resemble those of the Isospondylous fishes in general, neither had they any resemblance to those of the Catostomidæ. Wishing to apply the more exact methods of comparison of later times, I asked Dr. D. S. Jordan for scales of *Gonorhynchus,* and he has very kindly sent material from *G. abbreviatus* Schlegel, obtained by Alan Owston in the Yokohama (Misaki) market, Japan. These scales wholly confirm the reference of *Notogoneus* to the Gonorhynchidæ, and afford a remarkable illustration of the constancy of scale-structure through millions of years and migrations over the earth. The long parallel-sided scales of *G. abbreviatus* are narrower than those of *N. osculus,* and the truncate base is crenulate, but the peculiar structure is entirely the same. The apical margin has a single row of 18 or fewer (never so many as in *N. osculus*) teeth, which are long and stout, and connected by a thin lamina. Just below these is a broad sculptureless band, the same in living and fossil forms. The lateral circuli are strictly longitudinal and not very dense. Spreading fan-like from the subapical nucleus are the radii (about 12), closely set, with longitudinal bands of curved lines, derived from the system of circuli, between them.

Jordan and Snyder[2] say of *G. abbreviatus:*

> Mr. E. C. Starks has examined the shoulder girdle of this species; it has the mesocoracoid arch, as usual with Isospondylous fishes. Its place is apparently with the earliest and most generalized of these forms.

The scales, however, are more like those of Acanthopterygians. Coming to details of structure, we find a striking resemblance to the scales of *Aphredoderus,* of which genus Jordan says: "Probably the most primitive of all living Percoid fishes, showing affinities with the Salmopercæ" (to which group Regan has more recently referred it). *Aphredoderus* has the same type of marginal teeth, though there is no hyaline band beneath them and the radii are few. Marginal teeth of the same type are found in another group, little related to *Aphredoderus* or *Gonorhynchus;* namely, the Characiform genus *Distichodus* of the fresh waters of tropical Africa. The rest of the *Distichodus* scale shows no close resemblance to that of *Gonorhynchus.*

We have, then, evidence of the extreme constancy of scale characters, even minute details, in the Gonorhynchidæ. On the other hand, the most striking feature of the Gonorhynchid pattern appears, not in the presumed allies of that family, but in other families supposed to be very far removed from it. Is this wholly a matter of independent evolution,

[1] *Bull. Amer. Mus. Nat. His.,* III., p. 117.

[2] Smithsonian Misc. Coll., 45 (1904), p. 236.

or did the Gonorhynchids early develop a type of scale-structure which has survived here and there in remote descendants? The actual origin of this type of scale may date back of the Gonorhynchids, but it is nevertheless a specialized structure, which in the absence of evidence to the contrary would be thought to be of relatively recent origin.

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ANTHROPOLOGY AT THE WASHINGTON MEETING

IV

The European and the American Child: PAUL R. RADOSAVLJEVICH.

On the basis of a summary study of 50,000 Europeans and 50,000 American school children, represented by various European and American authors, it is shown that the most important factors are: (1) age, (2) sex, (3) race; and the least important are (4) school brightness, and (5) environment. The general average values of these measurements for both European and American pupils are very much alike, the difference being most evident in their variations. American pupils vary more than their European brothers and sisters at all the school ages studied (5–20 years). Hebrew children show the greatest variation; then Anglo-Saxon; then Latin, and least variation is shown by Slav pupils. If we take in account, however, not the variation based on general arithmetical averages, but on individual cases of such racial groups, then we see that the difference in the variation (or distribution) of one group, say the Slavic group, is greater than the difference of variation between two groups.

This variation, however, is not uniform for all measurements: that for body heights and weights is the greatest, while that for the two common head diameters is the least. This might be due, of course, to the inaccuracy of measurements, or to the statistical treatment, or to the personal equation of the investigators, or to the collective method of taking the measurements, etc., or to all of these factors. It is, therefore, for the present at least, very hard to accept many of the conclusions derived from these data, for it is an established fact that a mere statistical interpretation of these results is not *eo ipso* a biological-anthropological possibility, nor, furthermore, that such a possibility carries with it a pedagogical necessity.

Pedagogical Anthropology in the United States: PAUL R. RADOSAVLJEVICH.

Physical anthropology of pupils in the United States is beginning to develop along scientific lines, both in regard to the method of collecting data and in describing and explaining these inductive facts. The purpose of school anthropometric investigation in the United States has been based on all kinds of criteria, but not on primarily scientific-pedagogical criteria. These criteria might be grouped into (*a*) statistical-correlative (Boas, Bowditch, Porter, Peckham, Byer, Macdonald, West, Baldwin, *et al.*; (*b*) hygienic-comparative (Sargent, Hitchcock, Seeley, Seaver, Crampton, Fuld, Smedley, Hastings, *et al.*); (*c*) pathological-comparative (Wyley, Bar, Goddard, *et al.*).

Scientific anthropological criterion in the study of physical traits of children and youth is suggested in the works of Dr. Aleš Hrdlička and B. A. Gould, who combine the spirit of three great European schools in pedagogical anthropology (Meumann-Martin school in Germany, Godin school in France, and Sergi school in Italy). This criterion might be called biological-pedagogical, a criterion which has been more or less propagated among educators by G. Stanley Hall's "Adolescence," and the recently translated Montessori's "Pedagogical Anthropology," the only two general books on pedagogical anthropology published in the United States.

The future of scientific pedagogical anthropology in the United States will depend largely on the establishment of (*a*) an anthropological-pedagogical museum, (*b*) an anthropological-pedagogical laboratory, and (*c*) special academic chairs for pedagogical anthropology, the scientific discipline of which will be binding on all those who are studying education, psychology, sociology and criminology.

The Comparative Convolutional Complexity of Male and Female Brains: E. E. SOUTHARD.

The material for the study consists of brain photographs (six views of each brain) in the collection of the Massachusetts State Board of Insanity, derived from over 500 brains in the possession of various state and private institutions of Massachusetts, including so-called "normal" brains and brains from a variety of psychopathic subjects. The method of the study is numerical, based upon counts of fissures and fissurets. The results, so far as interpretable, show no great sex difference in degree of fissuration.