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ANTHROPOMETRY

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INTRODUCTION

Definition: Anthropometry may perhaps be most simply and comprehensively defined as the conventional art or system of measuring the human body and its parts. The systems of measuring the skull and the skeleton are known separately as *craniometry* and *osteometry*, but these terms are frequently merged with that of anthropometry; thus we speak only of anthropometric instruments, anthropometric methods, anthropometric laboratories.

Object: The object of anthropometry is to supplement visual observation, which is always more or less limited and uncertain, by accurate mechanical determinations. The ideal function of anthropometry would be the complete elimination of personal bias, and the furnishing of absolutely correct data on such dimensions of the body, organs, or skeleton, as might be of importance to those who are to use the measurements. This ideal is not attainable to a perfection, but it is the highest duty for every worker to strive for as close approach to it as may be in his power.

Diversity: Anthropometry in general is not and may never be one uniform system. It is a handmaid to various classes of workers who have different objects in view, and measurements that are indispensable to one may be of no concern to another.

Measurements of the body were begun and are used by the artisan, and by the artist, the object of the one being a proper "fit" and that of the other a correct or artistically superior production. They were and are employed in recruiting armies, with the aim of eliminating the inferiors. They are used to some extent by medical men and dentists, to assist them in reaching diagnosis or tracing improvement in their patients. They enter largely into the modern systems of college and other gymnastics, and lately also into those of the popular baby studies. Certain measurements play important rôle in criminological and medico-legal identification. Finally, we have measurements that have become invaluable aids to scientific research in physiology, anatomy and especially anthropology.

To summarize, measurements on the human body or its parts are practiced for:

1. Industrial purposes;
2. Regulation of art;
3. Military selection;
4. Medical, surgical, and dental purposes;
5. Detection of bodily defects and their correction in gymnastics;
6. Criminal and other identification;
7. Eugenic purposes; and for
8. Scientific investigation.

As a result of the multiple applications of body measurements, there have become differentiated, aside from the industrial and artistic systems which are of little interest to us in this connection, the military, criminological, and also clinical and eugenic anthropometry, besides that used for strictly scientific research and more particularly for anthropological purposes. As to the last named, were it not for the seeming alliteration of the two words, the term *Anthropological anthropometry* would be of real utility.

The diversity of measurements in the various above named branches of activities is a legitimate necessity. Regrettably, this diversity extends also more or less to instruments and methods, which makes a free interutilization of the obtained data difficult if not impossible. There is a great loss of effort, and even the most closely related of the above branches remain more or less strangers to each other. One of the foremost aims of all those interested in anthropometry in the broader sense should be a general unification of instruments and methods, as far as this may be practicable.

Anthropology: The present treatise is devoted to measurements used in anthropology. The aim of anthropological measurements is not to replace, but supplement visual and other observations, or give them more precision.

Variety of Measurements: There are none except natural limits to the number or variety of measurements that can be legitimately practiced on the human body or its remains. Moreover, every measurement or set of such, if carefully secured on sufficient numbers of individuals representing different human groups, will be of some value. But some of the measurements were early seen to be of greater general interest or importance than others, came into universal use, were properly regulated, and constitute to-day the anthropological SYSTEM OF ANTHROPOMETRY. This system, however, though rigid in

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essentials, has no definite limits, and is subject to such changes as may in the course of time be found advisable.

In the development of the system it was soon found that diversity of method was very prejudicial to progress, which led to attempts at regulation of the methods and instruments by schools, by national, and finally by international agreements. Unfortunately, the earlier agreements conflicted, in consequence of which a great deal of work was lost. Up to the Franco-Prussian war of 1870, the system of Broca or the French school was almost universal; after the war, however, the rapidly growing tendency in Germany for individualism did not spare anthropometry. In 1874 the first proposals in this direction were made by Prof. Ihering to the Congress of the German anthropological societies. In 1877 a Craniometric Conference was held on this subject at Munich, and still another took place in 1880 in Berlin. The outcome of the deliberations at these conferences was a scheme drawn up by Professors Kollman, Ranke, and Virchow, which was submitted for consideration to the 13th General Congress of the German Anthropological Society, held at Frankfort-on-Main in 1882. The scheme was adopted and designated as the "Frankfort Agreement."¹ It introduced new nomenclature and other modifications, with unfortunate results. Henceforth there were the "French School" and the "German School" of anthropometry. But the new system did not prevail and the need of an international unification of methods began to be felt.

One of the first attempts at an international unification of anthropometric measurements was made in the early 90's in Paris, by Dr. R. Collignon.² The effort was made in connection with certain anthropometric studies planned by him at that time, and consisted in his sending to various anthropologists of prominence in as well as outside of France certain propositions, with a request for their critique and opinion. The effort, while favored in France, remained that of an individual, and led to nothing definite.

A much more promising, yet in the end quite as fruitless effort for unification of anthropometric methods was made at the occasion of the Twelfth International Congress of Prehistoric Anthropology and Archeology, held in August of 1892, at Moscow. Two commissions

¹ Garson, J. G. The Frankfort Craniometric Agreement, with Critical Remarks thereon. *J. Anthropol. Inst. Gr. Brit. & Ire.*, 1885, xiv, 64-83.

² Collignon, R. *Projet d'entente internationale au sujet des recherches anthropométriques dans les conseils de revision.* *Bull. Soc. Anthropol. Paris*, 1892, xiii, 186-8.

→ states he recommended "horizontal plane" for orientation. The skull was defined as follows: "That plane which is determined by two straight lines (one on either side of the skull), connecting the lowest points on the inferior margins of the orbits with the points of the upper margin of the base auditory meatus situated vertically above their centers." pp. 64-65.

were appointed for the purpose (see p. 6), but they accomplished nothing substantial. The interest in the subject was however well aroused by this time, and the anthropologists meeting in 1906 with the XIIIth International Congress of Prehistoric Anthropology and Archeology in Monaco, undertook seriously and in a large measure successfully the formation of an International Agreement on Anthropometry. The work thus auspiciously begun was continued by the anthropologists meeting with the XIVth Congress, in 1912, at Geneva. The task thus undertaken is not yet finished; but what has been done furnishes a sound and large nucleus for further developments. At the occasion of the XVIIIth International Congress of Americanists, at London, in 1912, foundations were laid for the formation of an international association of anthropologists,¹ and one of the essential features of such an association must be a permanent International Anthropometric Board, which will deal with all questions relating to the harmonization of anthropometric methods, instruments, and procedures.

The results in anthropometric unification thus far attained are embodied in two reports, published originally in French in 1906, and in the French, English and German in 1912. As these agreements are of fundamental importance to every worker in physical anthropology, and as they are not as readily available as desirable, they will be here republished. In translating the French report of 1906 there were found a number of points which needed a few words of explanation and this report, therefore, is annotated.

THE INTERNATIONAL AGREEMENT FOR THE UNIFICATION OF CRANIOMETRIC AND CEPHALOMETRIC MEASUREMENTS

REPORT OF THE COMMISSION APPOINTED BY THE XIII INTERNATIONAL CONGRESS OF PREHISTORIC ANTHROPOLOGY AND ARCHEOLOGY, AT MONACO, 1906

BY DR. G. PAPILLAULT, REPORTER OF THE COMMISSION

Translated from Dr. Papillault's report in *L'Anthropologie*, 1906, XVII, 559-572, by A. H.

On the motion of MM. Hamy, Papillault and Verneau, the Organizing Committee of the XIIIth International Congress of Prehistoric

¹ See Marett, R. R. Report of an International Conference, etc. Proc. XVIIIth Intern. Cong. Amer., London, 1913, I, LXXXVI.

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