# SCIENCE

VOL. 99 FRIDAY, JUNE 16, 1944 No. 2581



SCIENCE: A Weekly Journal devoted to the Advancement of Science. Editorial communications should be sent to the editors of SCIENCE, Lancaster, Pa. Published every Friday by

THE SCIENCE PRESS

Lancaster, Pennsylvania

Annual Subscription, $6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary in the Smithsonian Institution Building, Washington 25, D. C.

# GIANT EARLY MAN FROM JAVA AND SOUTH CHINA[1]

By Dr. FRANZ WEIDENREICH

AMERICAN MUSEUM OF NATURAL HISTORY

JAVA, which stood in the focus of anthropologists fifty years ago when Eugène Dubois first announced the find of the "missing link," *Pithecanthropus erectus,* became a cynosure again when Dr. R. von Koenigswald, of the Geological Survey of Netherlands Indies, made a series of discoveries, each later one always more important than its predecessor. It began, in 1937, with the discovery of a large fragment of a lower jaw found in the Trinil beds of Sangiran. This jaw was much more complete than the one picked up by Dubois from the Trinil beds of Kedung Brubus, in 1891, and later attributed by this author to *Pithecanthropus.* Then followed the surprising discovery, in 1938, of a skull cap—fragmentary too—but much more complete than Dubois' Trinil skull which it resembles as one egg another in general form as well as in details. This specimen proved beyond the slightest doubt that *Pithecanthropus* is morphologically not a giant gibbon, and as such intermediate between ape and man, as Dubois insisted, but a true hominid very like the Peking man, *Sinanthropus pekinensis.* In 1939, von Koenigswald's native collector picked up an upper jaw from the same site from which the skull cap of 1938 had come. This jaw, almost complete, but slightly crushed, was the second surprise. It was in all dimensions larger than any known fossil or recent human jaw; there was a fairly wide gap between the canine and the incisor; the canine was not tusk-like but showed all the peculiarities of the *Sinan-*

[1] Read before the American Ethnological Society in New York, May 9, 1944. The war and its consequences prevented Dr. R. von Koenigswald from announcing the new discoveries referred to in this paper. Since Java is cut off and neither Dr. von Koenigswald nor the Geological Survey of Netherlands Indies are approachable, I asked the Board for the Netherlands Indies, Surinam and Curaçao, which represents the government of Netherlands Indies, for an official permit to publish the material, being sure of Dr. von Koenigswald's personal consent. Mr. G. H. C. Hart, the chairman of the board, kindly approved the publication.

than the Vi extract. The probable interpretation of these results is that the Vi extract possessed the capacity to produce superior anti-invasive immunity, while the typhoid antigens excelled in producing substances which neutralized the toxicity of large doses of bacterial protein—presumably because these typhoid antigens represented more completely the entire typhoid organism.

Although the Vi extract can be prepared from V-form typhoid organisms, the V-form of *S. coli* 5396/38 offers an appreciably more abundant source of this substance which, despite its extra-generic origin, possesses exceptional antityphoid immunogenic properties. Practical application of the use of this Vi extract—specifically as a fortifying agent in bacterial vaccines and in combination with conventionally prepared immunogens of the typhoid bacillus—are under consideration. Studies of its toxicity and stability and of its serological characteristics are now in progress and will be made the subjects of later detailed reports.

GEORGE F. LUIPPOLD

ARMY MEDICAL SCHOOL,
ARMY MEDICAL CENTER,
WASHINGTON, D. C.

# SCIENTIFIC APPARATUS AND LABORATORY METHODS

## AN APPARATUS FOR MEASURING THE TORSION ANGLE IN LONG BONES

RECENTLY, in a problem involving measurements of the degree of torsion existing in certain long bones of the extremities, it became necessary to construct a device for making such measurements. Although this torsiometer was devised for use in a particular project, it might also find application in making other anthropometric measurements or in various studies requiring rather exact values for the degree of torsion or twisting of an object. The following is a description of the construction and use of the apparatus.

As shown in Fig. 1, the apparatus consists essentially of a 360° plastic protractor (A) and a pair of pointers (B), attached to a shaft (C) passing through the protractor's center. The protractor and shaft are mounted on a pivot (D) so that the shaft may be swung from side to side if necessary. To permit this swinging the support (E) must be triangular in cross-section, with the apex directed forward. The whole is mounted on a solid level base.

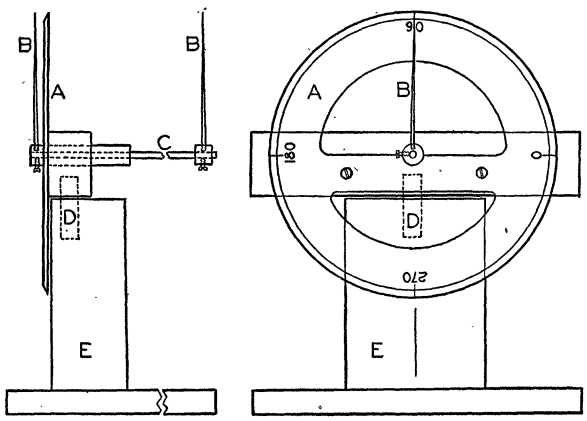


FIG. 1. Diagram of the torsiometer showing side and front views.

Shafts of various lengths may be used, depending upon the length of the object studied, or as in Fig. 1, the indicators may be threaded and screwed into tapped washers; the washers and indicators may then be moved along the shaft and fixed at the desired position with a set screw. The shaft should be perfectly straight and should fit snugly in its bushing.

The size of all parts, of course, will be arbitrarily determined by the size of the object to be studied.

An ordinary ring stand and clamp will usually suffice to hold the object.

Before making a measurement, it is important to have both indicators in exact alignment. The bone (or other object) is clamped rigidly, parallel to the shaft with the long axis of the proximal epiphysis in line with the 90° radius of the protractor. The indicator at the free end of the rod is then turned until it is in line with the long axis of the distal extremity of the bone, and the protractor indicator moves with it. The number of degrees through which the shaft has turned is then read off directly on the protractor.

In cases where the object is not perfectly straight, but is curved to one side or the other, the protractor and shaft may be turned on the pivot until the rear indicator is in alignment with the distal end of the object.

This device has several points to recommend it. The parts are inexpensive and easily obtained. It is easily constructed and readings may be made directly, simply and rapidly.

VERNON E. KRAHL

SCHOOL OF MEDICINE,
UNIVERSITY OF MARYLAND

## BOOKS RECEIVED

NASH, ERNEST. *Roman Towns.* Illustrated. Pp. 201. J. J. Augustin, Publisher. $6.00.

OSBORN, FAIRFIELD. *The Pacific World.* Illustrated. Pp. 218. W. W. Norton and Company. $3.00.

SAWYER, RALPH A. *Experimental Spectroscopy.* Illustrated. Pp. viii + 323. Prentice-Hall, Inc.

SLADEN, FRANK J. *Psychiatry and the War.* Pp. xxii + 505. Charles C Thomas. $5.00.