tion. Undoubtedly, many a conscientious objector to military service would be willing to volunteer for such nutritional study.

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FALSE BLOSSOM IN PERIWINKLES AND ITS CURE BY HEAT

ONE of the chief difficulties in the study of false blossom has been the lack of a host in which the disease could be reproduced as it occurs in the cranberry which, for various reasons, is not a good experimental plant. Under the stimulus of finding a favorable host in which to observe the efficacy of heat treatments for cure of false blossom, attempts were made to transmit virus from cranberries to periwinkles (*Vinca rosea*). The parasite, *Cuscuta campestris* Yuncker, which had been shown to transmit certain other viruses,[1] was used. It proved to be an efficient vector. Through its parasitic activities, false blossom was taken to periwinkles and also to potato, tomato, tobacco and *Nicotiana glutinosa* plants. Under favorable conditions the disease appeared in periwinkles within about one month after exposure to the parasite. The virus was readily transmitted in all the new hosts by grafting.

False blossom periwinkles were cured easily by heat treatments. Exposures at 40° C for one week cured the tops but not the roots, but exposures for two weeks cured both tops and roots. Diseased periwinkles were able to endure the treatments without serious injury. Whether false blossom can be cured in the cranberry has not yet been determined. Experiments designed to test this possibility are in progress. In its reaction to heat in periwinkles, false blossom virus behaves similarly to that of aster yellows.

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SCIENTIFIC BOOKS

SINANTHROPUS PEKINENSIS

The Extremity Bones of Sinanthropus Pekinensis. By FRANZ WEIDENREICH. *Paleontologia Sinica* New Series D. No. 5. 82 pp. 20 tables. 34 plates. Peking, 1941.

THIS latest paper in the long series of studies of the *Sinanthropus* material by Dr. Weidenreich had received only a sparse distribution in the United States before the outbreak of war halted its importation. Because of the tremendous interest attaching to the Choukoutien remains, as well as the inaccessibility of many of the accounts dealing with the material, a summary may be useful.

Unfortunately the Peking calvariae have not been accompanied by a similar abundance of arm or leg bones. So far we possess only seven fragments of femur, two of the humerus, one of the clavicle and one carpal bone: the *os lunatum*. Nevertheless, these remains are such as to permit observations concerning their general evolutionary status.

In the case of the femur, Dr. Weidenreich believes the material justifies the conclusion that *Sinanthropus* was short in stature, approximating the average of the present-day Eskimo or Japanese. The structure of the bone betrays certain distinctive traits. The medullary canal of the shaft is, for example, very narrow and the walls correspondingly thick—much more so than in modern man. Neanderthal femora are more rugged, and the degree of forward bending of the shaft in this latter form is much more pronounced than in the Peking type. In these two respects, *Sinanthropus* approaches *sapiens* more closely than does *neanderthalensis*. All in all, some nine minor characters are noted as more or less distinctive and apparently specific for *Sinanthropus*. Nevertheless, the femur is definitely human in character, and there is no doubt that Peking man walked erect. The proportions, the presence of a linea aspera, and the position of the gluteal tuberosity, are definitive upon this point.

The humerus, also, is of human character. As in the case of the femur, a few minor peculiarities are noticeable. They are, however, features occasionally to be observed in modern man. The humero-femoral index, which expresses the length of the humerus as a percentage of the length of the femur, is indicated at about 79. This falls in the existing human range, whereas in the anthropoids the index ranges well over 100. An index of 79 is thus amply suggestive of the essentially human and upright posture of *Sinanthropus*.

The semi-lunar wrist bone or *os lunatum* is similarly human, though its height-breadth and length-breadth indices are variant in an anthropoidal direction. The clavicle is seemingly more akin to modern man than that of *neanderthalensis*.

There seems no doubt, in view of the above evidence, that Dr. Weidenreich's contention that man had already assumed an erect posture, in other words was a bipedal ground-dwelling primate before his skull and dentition had been so extensively modified in a human direction, is fully acceptable.

[1] Folke Johnson, *Phytopath.*, 31: 649, 1941.

Expressing the opinion that *Pithecanthropus* and *Sinanthropus* can, at best, be regarded as no more than racially distinct, Dr. Weidenreich is sharply critical, justifiably so in the eyes of this reviewer, on the inadequacy of our present nomenclature in relation to the taxonomy of the Hominidae. Obviously it demands revision. He also argues on the basis of the Choukoutien femur fragments that the famed Trinil thigh bone can not possibly represent the same individual as the *Pithecanthropus* calvarium. In addition he reaffirms his belief in the Mongoloid affinities of *Sinanthropus*.

Irrespective of the eventual settlement of some of these perennial and favorite subjects of debate, the value of Dr. Weidenreich's contributions upon the subject of fossil man can not be overemphasized. He has been as prompt as is consistent with scientific accuracy in issuing reports; in wealth of anatomical detail and comparison with other fossil forms, his studies have lifted human paleontology to a new level of attainment. In all these matters the present monograph maintains the same high standard. One hopes that further publications may be undertaken here in the United States and that the exigencies of war will not completely interrupt, at least in terms of laboratory study, the intensive exploitation of the most remarkable body of material yet acquired on the human history of the earlier Pleistocene.

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WATER-SUBSTANCE

Properties of Ordinary Water-Substance. American Chemical Society Monograph. By N. ERNEST DORSEY. xxiv + 673 pp., 13 figs., 289 tables. New York: Reinhold Publishing Company. 1940.

THIS book assembles all the physical constants of ordinary water-substance (excluding isotopes). Never before have they been gathered into one volume. Of course, those who need to use such constants know already that this book is indispensable, and need not be told what a masterpiece it is; but it has a wider usefulness which should be pointed out. Water is of interest not only to physicists, chemists and engineers. It is one of the fundamental substances of the universe, just as the ancients suspected. Any one who doubts this fact is referred to Dr. Dorsey's classic as proof.

This book of tables, so exhaustive, so meticulously assembled, compared, recomputed and revised (which a veteran of the National Bureau of Standards could be depended upon to produce), can be studied as a yardstick of physical science. Lincoln once explained to a jury what the word "demonstrate" meant. He said he looked the word up in the dictionary and found "to demonstrate, as a proposition in Euclid." So he got a copy of Euclid and by the time he had finished it he understood what "demonstrate" meant.

Now too many who have never had much discipline in physics are being swept off their feet by much modern jargon, which impresses them about as the squabbles of the medieval schoolmen. Too many fifth-columnists against science are exploiting this confusion to undermine public faith in the facts of physics, very often with funds exploited from scientific discovery. A perusal of this book, checking up a few of the sources, can be depended upon to produce a healthy respect for the reality of science. Thus, it provides a vista of the anatomy of science which should be viewed by every college student.

After carefully defining symbols and units, the energy constants for the synthesis and dissociation of water are presented. Then single-phase systems, water vapor, liquid water and ice, and finally multiple-phase systems and phase transition are covered in over 600 pages of tables. Each table is explained briefly, and after each are given the references to the sources of the data; but to present them in comparable form an immense amount of recomputation has been necessary, often revealing and correcting errors in previous compilations.

The purpose of these tables has been to provide the inexpert with the data he may need, explaining the formulas and methods on which they are based, and giving the means of more detailed study when desired. Any one interested, therefore, can find out immediately the status of the facts up to 1938, and search the literature himself for more recent data. The book is a monument to its author, its institution, and to the myriad devoted workers whose careful labors are assembled.

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REPORTS

THE ANNUAL REPORT OF THE DIRECTOR OF THE NEW YORK BOTANICAL GARDEN

THE report of Dr. William J. Robbins, of the New York Botanical Garden, reviewing the four years of accomplishment of the garden since 1937, when he became director, was presented at the annual meeting of the board in January. He stated that, even though war might modify and curtail activities, the institution