News of Science

Jaw of Gigantopithecus

John Hillaby, an English science writer, has reported the discovery of a fossil lower jaw attributed to *Gigantopithecus blacki* [*New York Times,* 17 Mar. 1957]. If this mandible is actually that of *Gigantopithecus,* it will contribute greatly to the resolution of one of the current enigmas of paleoanthropology.

Gigantopithecus is a genus of extinct primate based on three fossil molar teeth (one upper, two lower) found by the Dutch paleontologist, G. H. R. von Koenigswald, in native drugstores of Hong Kong between 1934 and 1939. These teeth are truly colossal, greatly exceeding all known human and anthropoid-ape teeth in their dimensions. Even those of an adult male gorilla are dwarfed by comparison. Von Koenigswald [*Proc. Kon. Akad. Wet. Amsterdam,* Sec. Sc., **38**, 872, 1935] regarded the holotype tooth as that of a giant ape —hence the name *Gigantopithecus*. Discovery of the two other teeth strengthened this opinion. The late Franz Weidenreich [*Anthrop. Papers Am. Mus. Nat. Hist.,* **40**, pt. 1, 1, 1945], however, thought that the teeth were human, rather than simian; moreover, he made *Gigantopithecus* a keystone of his tenuous hypothesis that the ancestors of man were giants.

The primate nature—indeed, the catarrhine primate nature—of these isolated teeth seems clear. Yet, since they represent such slender evidence for the precise taxonomic allocation of *Gigantopithecus,* it has seemed logical, to some people, at least, to label this genus *incerta sedis.* Notwithstanding, considerable futile argument respecting its status has continued. For some, it is an anthropoid ape; for others, a man; for still others, an Asiatic representative of the Australopithecinae, that group of so-called "man-apes" from the early Pleistocene of South Africa. From the faunal relations in which they were apparently found, the *Gigantopithecus* molars have been dated, at earliest, Middle Pleistocene.

The new jaw, attributed to *Gigantopithecus,* was recently found in a high cliff cave in Kwangsi province, South China, by a peasant. W. C. Pei, a paleontologist who played a major role in the discovery of the remains of Peking man (*Sinanthropus pekinensis*), gives the geological age of the new find as Middle Pleistocene; this would make the giant a contemporary of Peking man. Moreover, Pei regards the animal as a giant ape, hence agreeing with the original diagnosis of von Koenigswald. He believes, however, that it was more manlike than any other ape, living or extinct.

Pei also sent Hillaby an excellent photograph of the new jaw, which is reproduced in the *New York Times* article. This photograph, taken from above, suggests that the mandible is quite complete rostrally, and backwards so as to include the second molar teeth. The remainder of the mandible—third molars, both rami, hence, unfortunately, the coronoid processes and condyles—is lacking. The occlusal surfaces of the teeth appear to have been worn down considerably, so that the crown patterns of the molars cannot be made out. In the general shape and proportions of their crowns, however, these teeth distinctly resemble the two type lower molars of *Gigantopithecus*. Thus, at least on dental grounds, the allocation of this new mandible to that genus seems justified. We have, as yet, however, no information about its actual size.

From the photograph, at any rate, one can concur with Pei's diagnosis of the jaw as that of an ape (but whether it is actually more manlike than the lower jaws of other apes, living or extinct, remains to be determined). Thus, the canines are massive, as in apes (they are small in men, both fossil and extant). The first premolar tooth, in contrast to the second, appears clearly to be narrow and compressed, hence sectorial, as in the anthropoid apes (rather than essentially rectangular and molariform, as in hominids); this in turn suggests a large maxillary canine tooth. As in the type specimens, the molars are distinctly longer than broad, this being another simian character. The second molar tooth is larger than the first molar, as in anthropoid apes (the reverse being the rule for men). There obviously is a large simian shelf of bone jutting backward from the lower symphysial region between the two halves of the body of the mandible, as in the great apes; from which one is led to infer, with reasonable certainty, that there is no chin.

The body of the jaw itself seems to be unusually thick in relation to tooth size (but it is entirely possible that this impression may be a photographic illusion), although not as thick relatively as that of *Meganthropus palaeojavanicus*. The incisor teeth, of which the left medial one is lacking, appear to be relatively small, even peglike rather than chisellike. The space between the canine teeth is therefore comparatively narrow; consequently, instead of the tooth rows being parallel, as in existing anthropoid apes, they are slightly incurved rostrally to approximate a Gothic arch. In this, the new mandible somewhat recalls the Australopithecines, which are characterized by remarkably small incisor teeth. Nevertheless, these particular teeth of the Chinese fossil are not so markedly reduced as are those of the South African man-apes; and the presence of large canines, sectorial first premolars, and prominent simian shelf offers scant comfort for those who, like the late Robert Broom, have identified the original, isolated teeth as those of an Asiatic Australopithecine.

The mandible does not represent the entire animal; nor, indeed, can it foretell the entire skull. Yet, despite these limitations, this new lower jaw, if it truly is that of a *Gigantopithecus,* seems to make it clear that this "Hong Kong drugstore giant," as the late Earnest Hooton dubbed him, was neither an ancestral giant hominid nor an Australopithecine, whatever precisely he may have been.

WILLIAM L. STRAUS, JR.
Johns Hopkins University

Indian Ocean Expedition

Yale University's Bingham Oceanographic Laboratory will send the first major deep-sea scientific expedition into the Indian Ocean area around the Seychelles Islands next summer. No marine-biological expedition has ever concentrated its efforts in the Seychelles area, so that no major scientific collection of marine specimens from the area exists. James E. Morrow, Jr., research associate at the Bingham Laboratory, will lead the group, which will include Willard D. Hartman, assistant professor of zoology and associate curator of invertebrate zoology, and Alan J. Kohn, graduate student in zoology. Technical adviser for the trip will be Alfred C. Glassell, Jr., of Houston, Tex.

The expedition will use two vessels, a 110-foot mother ship in which a complete oceanographic laboratory will be installed and in which supplies will be

kept, and a 40-foot vessel for collecting specimens and doing hydrographic work. The 110-foot vessel is necessary because of the inaccessibility of the Seychelles.

The expedition will start on about 1 Aug. from Colombo, Ceylon, and will make exploratory stops at the Maldive and Chagos Islands before reaching the Seychelles. In December the party will proceed to Mombasa, Africa, where it will officially disband.

However, all three of the scientists are planning much more extensive research and exploratory trips than just during the course of the actual expedition. Morrow, for example, will leave Yale in June to collect specimens and do research in Japan and Formosa. After reaching Mombasa he will go to Beira and Durban in Southeast Africa, and possibly to Mauritius Island for further work, and will then visit museums in Europe and London before returning to Yale in February 1958. Hartman and Kohn will visit several spots in the Orient before joining the expedition in Ceylon in August.

Morrow, during the Seychelles exploration, will concentrate on the so-called "bill" fishes, mainly the marlin family, to further studies he has been engaged in for the last decade. The group will also make shore and reef studies and collect specimens in these categories as well as doing open-sea collecting. Hartman will concentrate on collecting sponges, and Kohn will devote most of his attention to the mollusk family. Specimens will be collected not only for Yale's laboratory but for the Natural History Museum of Stanford University.

Donner Provides X-rays

The Donner Foundation of Philadelphia has announced that it has ordered 12 2-million-volt x-ray generators for the treatment of deep-seated cancers at medical-radiological centers across the country. The machines, which cost $833,000, will be installed before the end of the year at the Los Angeles (Calif.) Tumor Institute; the Johns Hopkins Hospital of Baltimore; the Charity Hospital of Louisiana at New Orleans; the department of radiology of the University of Pennsylvania Hospital; the Temple University Hospital; the University of Oregon at Portland; the division of radiotherapy and isotopes of the Mary Fletcher Hospital at Burlington, Vt.; the Tom B. Bond Radiological Group of Fort Worth, Tex.; the department of radiotherapy of the St. Joseph Infirmary at Louisville, Ky.; the University of Missouri School of Medicine at Columbia; the University Hospital at Oklahoma City, and the Grace-New Haven Community Hospital at New Haven, Conn.

New Hormone

A research team at the University of Chicago has reported that it has established the mechanism and site of production of a new hormone that controls red blood cell formation. The hormone, erythropoeitin, is produced in response to the changing balance between the oxygen demand and supply of the body. The process is analogous to the mechanism by which the level of blood sugar regulates the production of insulin.

Erythropoeitin is produced by the kidneys and is found in normal blood of human beings and animals. It stimulates the bone marrow to make the red cells. Though it has not yet been chemically isolated, it has been concentrated in blood serum by 100 to 1000 times its normal amount. Leon O. Jacobson, professor of medicine, and three members of his research group, Eugene Goldwasser, assistant professor of biochemistry, and Walter Fried and Louis F. Plzak, Jr., medical students, reported the investigation results in the 23 Mar. issue of *Nature*.

Acquisition of Site for NSF Observatory

The National Science Foundation has announced that the Corps of Engineers, U.S. Army, has undertaken acquisition of the site for the foundation-supported radio astronomy observatory at Green Bank, W.Va. The Engineers, acting on NSF's behalf, have established a field office for this purpose at Marlinton, W.Va. The new research center for radio astronomy will be constructed and operated for the use of the nation's scientists by Associated Universities, Inc., under contract to the foundation.

Land to be purchased will encompass approximately 2100 acres bounded on the south by Green Bank, on the east by Route 28, on the west by U.S. Forest Service lands, and on the north by a line running east to west approximately 2 miles north of Green Bank. In order that the observatory may be protected to the maximum extent possible from man-made radio noise or interference, restrictive easements will be acquired, as necessary, on approximately 10,000 acres of the privately owned lands adjoining the site. It is not anticipated that these easements will interfere with the normal activities or purposes for which these lands are currently being used.

Green Back is in Pocahontas County, in the mountains of southeastern West Virginia, about 35 miles south of Elkins. As was announced earlier by the foundation, it was selected over 29 other sites after an intensive review covering a wide area of the country. The Green Bank site fulfills most requirements for an ideal site for a radio telescope—requirements which are extremely stringent in terms of the need for an absolute minimum of radio noise or interference on wavelengths below 10 meters.

Ford Foundation Annual Report

Approximately $2 of every $3 spent by the Ford Foundation in the last fiscal year have directly benefited education in the United States. The foundation's 1956 annual report shows that $401 million of a total commitment of $602 million was designated for support of basic institutions and activities in education during the fiscal year ended 30 Sept. The $401 million figure—representing $312 million in grants and $89 million reserved for future grants—includes the sum of $210 million to help improve college faculty salaries.

Other major educational commitments made by the foundation during the year included: medical education, $100 million; the Fund for Adult Education, $17.5 million; educational television, $8 million; development of library resources, $5 million; nonsalary teacher benefits, $5 million; and publication in the humanities and social sciences, $1,725,000.

Of the $400 million total, $50,479,000 in grants came from appropriations carried over from previous years, including a $50-million appropriation that was converted into "accomplishment grants" for institutions which had led the way previously in bolstering faculty salaries. Other appropriations and grants for American education totaled nearly $3,411,000.

NBS Solar Furnace

A solar furnace that generates temperatures up to 3500°C was demonstrated recently at the National Bureau of Standards to winners of the 16th Westinghouse Science Talent Search. This first public announcement of the new NBS facility coincided with the annual Washington visit of these young people.

When the furnace mirror is turned to pick up the sun's rays, a test specimen of high-temperature resistant material will shatter into pieces as its temperature soars almost instantaneously to 3500°C. Research people at NBS are now using the solar furnace to melt refractory materials in a controlled environment free of contaminating agents. Such furnaces are being employed in an intensive search at the bureau and at other scientific laboratories throughout the nation to find materials that will withstand the extreme temperature conditions found in atomic reactors, jet aircraft engines, and guided missiles.