

ECLIPSE MAY 29

The moon will eclipse the sun May 29. But the path of totality streaks across a bleak section of the southern Atlantic Ocean, where there are few accessible islands and little hope of good weather. This diagram shows how an eclipse occurs: the moon comes between the sun and the earth. The path of totality is the moon's shadow or umbra on the earth. A belt (not shown) on each side the path of totality is partially darkened by partial blocking of the sun by the moon. This belt is known as the penumbra.

nor yet his own inspiration, Dr. Jagger revealed. At first the proposal was to pack a lot of dynamite to the critical point on muleback, but a planter pointed out that bombing planes could not only find the lava tunnels much more easily in the dense forest but could attack them more effectively when found.

Neither was the bombing attack conducted against the moving front of the lava columns, the volcanologist said. That would not have stopped them. In true modern air-warfare style, the planes struck at the base of operations—the heads of the lava streams just as they emerged from the slope of Mauna Loa. With 600-pound bombs of TNT they blasted in the roofs of the tunnels. This permitted the escape of the gases that were the principal source of heat for the lava. With their power supply thus cut off the streams were stopped at their source.

Science News Letter, May 28, 1938

ANTHROPOLOGY

New Fossils Add to Knowledge Of African Man-Like Ape

Canine Tooth Unlike Chimpanzee's in Either Size or Shape; Teeth in Place in Jaw Are Spaced Human Style

By E. N. FALLAIZE

Fellow, Royal Anthropological Society

A NEW connecting link between man and apes is forged by a fossil half-jaw discovered in South Africa. The new-found relic consists of the upper right jaw, with four teeth in place, and part of the bony palate, belonging to *Australopithecus*, the famous man-like ape of Taungs. The discovery is reported by Prof. Robert Broome of the Transvaal Museum. (*Nature*, May 7)

Australopithecus was first recognized and named by Prof. Raymond Dart in 1925, when a fossil skull of a new and primitive type, apparently half-way between chimpanzee and man, was found at the mining center of Taungs in the Transvaal. But this specimen was not full grown, representing a stage of growth of about five years of age. Most scientists, therefore, have since held that this skull did not stand in the human line of descent, but was to be regarded as an immature specimen of a new type of fossil chimpanzee, though in certain respects presenting human resemblances, possibly due to the fact that it was not full grown.

A few months ago Prof. Broome showed that this view was probably wrong, when he announced that he too had found further relics of *Australopithecus* in the form of a number of teeth, which while undoubtedly belonging to the fossil type identified by Dart, were slightly different from the teeth of that skull, approaching even more closely to human teeth.

Prof. Broome's present discovery is much more important than that. The lower canine is so much like the human that at first Prof. Broome hesitated to describe it as belonging to *Australopithecus*. Neither in shape nor size does it bear any close resemblance to the tooth of a chimpanzee.

The crucial discovery, however, is that of the part of the upper jaw. The teeth in position in the upper jaw are the second incisor, the canine, the first premolar and the first molar. The canine

is not much larger than in man, and is worn down to the same height as the second incisor and the first premolar. In the apes the canines are much larger in proportion to the other teeth and sometimes are almost like small tusks. But even more significant is the fact that the second incisor is situated close up to the canine. The importance of this lies in the fact that most students of the teeth of man and the ape are agreed that it is an infallible mark of a human character in dentition, when there is no gap between the front teeth and the canine teeth, as there invariably is in the teeth of the ape.

The preservation of part of the palate is also of the very (*Turn to Next Page*)

A Symposium on Cancer

Addresses by

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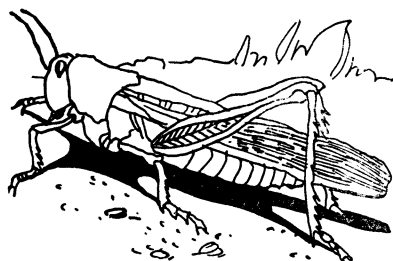
These papers summarize the growing body of scientific knowledge about cancer as it bears on public health problems, the clinical practice of medicine, and experimental biology.

The contributors, representatives of leading laboratories in this country and abroad, are men whose experimental work and observation of cancer cases have contributed significantly to the changing concept of cancer.

Their conclusions are of first importance not only to medical workers in the field of cancerology but to all clinicians, persons interested in public health policies, biologists, biochemists, physiologists, and plant pathologists.

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Two Junes Needed

IF WE mortals really could control the weather, as sometimes wish we could, we would be up against a very difficult problem next month. What this country needs is two kinds of June: a cool wet month, with driving rains, from Illinois west to central Kansas, and a hot, dry one from Indiana east to New England.

This is because of the crop pest situation. In the corn belt the great threats are grasshoppers and chinch bugs. These thrive in hot, dry weather but are drowned, beaten into the earth, and exposed to their natural enemies by cold rains in late spring.

From Michigan and central Indiana eastward, the outstanding enemy is the European corn borer. The flying adults move from field to field most easily in cool, moist weather, so that farmers in its occupied territory have cause to pray for less rain rather than more. A really good dry spell some time in June would prevent a good deal of the damage that otherwise will befall corn and the many other crops the borer infests.

There is a certain amount of overlap in the ranges of chinch bugs and corn borers, so that in that area there is bound to be some trouble, no matter what the weather.

Probably, if a choice had to be made, it would be better to take the weather that would discourage the borer, and to tell grasshopper and chinch bug to come on, and to come a-fightin'. For entomologists have worked out control methods for the two latter pests which are fairly effective, even if expensive, while

for the borer no real control has yet been discovered.

The best that can be done to fight corn borer is to make a thorough clean-up of all stubble in the fields it infests, plowing it under clean and deep, and burning what can't be plowed under. The resting larvae lurk in such trash, and if any of it is left undestroyed, presently there will be enough of the winged adults to re-infest the whole neighborhood.

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ASTRONOMY

Clears Astronomical Puzzle On Motions of Double Stars

AN ASTRONOMICAL puzzle on the motions of double stars has been cleared up by Dr. Leopold Infeld, colleague of Prof. Albert Einstein at the Institute of Advanced Study. Dr. Infeld's complex mathematical study entitled "Electromagnetic and Gravitational Radiation" appears in the *Physical Review*, (May 15).

Gravitational radiation may be a new term and concept to many laymen and scientists alike but astronomers have been wondering, for some time, if the effects of energy dissipation through gravity might cause a shift in the orbits of double stars. Theoretically it was suggested that, perhaps, double stars might gradually come closer together due to gravitational radiation.

In Prof. Einstein's theory of relativity the equations expressing the gravitational field have the form of a wave equation. Disturbances in the gravitational field energy are pictured as being propagated by waves through space. Such

disturbances have come to be known as gravitational radiation.

Dr. Infeld, who collaborated with Prof. Einstein recently in writing a new book "Evolution of Physics," has shown mathematically that for the cases of double stars the energy losses in the system, due to gravitational radiation, turn out to be negligible.

"The result," comments Dr. Infeld in the conclusion of his complex mathematical treatise, "shows the astonishingly small role played by the gravitational radiation in the motion of double stars."

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greatest importance. It has enabled Prof. Broome to reconstruct the upper jaw and roof of the mouth of Australopithecus. This reconstruction shows that the sides of the arch made by the teeth, where the molars are set in the jaw, are not parallel, as they are in the gorilla and chimpanzee, but are rounded as they are in man.

Enough of the nasal structure is left to enable Prof. Broome to say that the nose of Australopithecus was very much like that of the chimpanzee; but the incisors and canine teeth are much smaller, snout much narrower and shorter.

Prof. Broome says that he does not propose to discuss at present whether in the light of this new evidence Australopithecus is to be regarded as a descendant of a chimpanzee-like ancestor, or near the common ancestor of man and the chimpanzee. This question then for the moment may be left for future discussion, when further discoveries, which are anticipated, have been made.

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