SCIENCE NEWS

SUN FARTHEST NORTH—SUMMER BEGINS

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Science Service

When, on Thursday, June 22 at 6:03 a.m. Eastern Standard Time, 5:03 a.m. Central Standard Time, 4:03 a.m. Mountain Standard Time, 3:03 a.m. Pacific Standard Time, the sun reaches its greatest distance north of the equator, or, as the astronomer would say, its highest northern declination, summer will begin in northern latitudes and winter in southern latitudes. At this time the sun is in the constellation of Gemini or the Twins which, we may recall, was visible in the western sky in the early evening in April and May. In a few weeks more, when the sun passes on in its apparent eastern circuit of the heavens into the constellation of Cancer, the Crab, the early riser may see this constellation of the Twins in the eastern sky before sunrise.

Some twenty centuries ago the sun was in the constellation of Cancer at the beginning of summer. Now the gradual westward shifting of the equinoxes, or points of intersection of the plane of the earth's equator with the plane of its orbit, which is called the precession of the equinoxes, has brought the sun into the constellation of Gemini at this time. For the same reason future generations of men, some twenty centuries from now, will find the sun in the constellation of Aries at the beginning of summer. In the time of Hipparchus the sun was in Aries at the beginning of spring.

At the beginning of summer in the northern hemisphere the sun passes directly overhead at noon in latitude 23 degrees, 27 minutes, North, which we recognize as the position of the Tropic of Cancer, also as the obliquity of the ecliptic or the angle that the earth's equator makes with the plane of its orbit. As the sun is now farthest north, June 22 is for us the longest day of the year, but for the inhabitants of the southern hemisphere it is the shortest day of the year.

Strange as it may seem, the earth is now in that part of its orbit farthest from the sun. Its aphelion, or the point in its orbit that is most distant from the sun, will be reached on July 5. The perihelion, or point nearest to the sun, is reached each year about January 2, or shortly after our winter begins. When in perihelion the earth's distance from the sun is about 91,400,000 miles and when in aphelion 94,400,000 miles, so that we are about 3,000,000 miles farther from the sun now at the beginning of summer than we were last December at the beginning of winter. If we lived in the southern hemisphere, however, we should find that we were three million miles farther from the sun at the beginning of winter than at the beginning of summer.

One might naturally expect, as a result, to find the winters much colder and the summers much warmer in the southern hemisphere than they are in the northern hemisphere. As a matter of fact, the seasonal changes appear, if anything, to be less extreme in the southern hemisphere than in our own latitudes. This is attributed to the fact that there is far more water surface in the southern hemisphere than there is in the northern hemisphere and it is well-known that temperature changes are less extreme over water than they are over land. There is no doubt, however, that if this factor were eliminated, the seasonal changes would be more extreme in the southern hemisphere than they are in our own latitudes.

THE SIZE OF METEORS

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That meteors as bright as the brightest star are no bigger than small bird-shot is a conclusion drawn by Professor F. M. Lindeman and Mr. C. M. Dobson, authors of a recent article in the "Proceedings" of the Royal Society. A meteor as bright as the moon would, they find, be only an inch in diameter and would weigh about two ounces.

As a result of their study, the authors conclude that the temperature of the upper atmosphere is much higher than was formerly supposed. It has long been known that the fall of temperature with altitude continues only to a height of about seven miles where the temperature is as low as from 60 to 70 degrees below zero Fahrenheit. But from this altitude as high as "sounding balloons" have gone, which is about 15 miles, the temperature has remained about the same. This is what is known as the stratosphere or isothermal layer.

The recent investigators of meteors now conclude that this layer of fairly constant temperature extends up to a height of 30 miles, above which the temperature again rises, so that at altitudes of from 30 to 50 miles it reaches considerably above the freezing point, or about the average temperature at the earth's surface.

The density of the air at a height of 60 miles is calculated to be one millionth of that at the

surface. It is thought to be composed largely of ozone and its high temperature is thought to be due to heating by the long wave length heat waves from the surface of the earth.

DECREASE OF MALARIA

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MALARIA is generally decreasing throughout the United States, according to United States Public Health Service information, but in a few states a recent increase has been noted. Although the disease is now seldom found outside the southern states, it would be a mistake to assume that it is generally prevalent there. There are large areas of the south which are free of the disease or so nearly so that it does not assume the proportions of a public health problem.

Malaria is now prevalent only in certain regions of the Atlantic and Gulf coastal plain and along the lower Mississippi valley. It is there that it still constitutes a big problem, principally in the rural districts. The states of Mississippi and Arkansas show considerable increases in the number of deaths from the disease in the past year and although Missouri and Kentucky have shown a decrease over a period of years the results for last year show an increase. In the Carolinas, malaria is practically stationary after a marked decline some years ago. The upland and mountain regions of the south are practically free of the disease.

Testimony is general throughout the south that the disease has greatly declined there in the past twenty years. The "oldest inhabitant" of nearly every village can tell of how when he was a boy nearly everybody used to have their regular chills, while now the vendor of quack malarial cures finds little custom. The character of the disease has become more mild with the lessening prevalence and severe cases are increasingly rare.

PREHISTORIC GAMBLING GAME

Science Service

HOW a vanished race, which once lived in the isolated Rio Mimbres valley of southern New Mexico, shot craps has been revealed by prehistoric pottery dug up near Deming, New Mexico, by H. D. Osborn, of that place. In a scientific report just issued by the Smithsonian Institution, Dr. J. Walter Fewkes, of the Bureau of American Ethnology, who recently left Washington to make further explorations at the site of these discoveries, describes crockery showing scenes and figures from the daily life of a people whose very existence was doubted until a few years ago.

On the bottom of a broken jar there is a gambling scene representing three men playing a game with dice, the spots on which can be plainly seen. Just which one is winning it is impossible to say, as almost half of the picture is no longer visible. Arrows were apparently being used for stakes. One man seems to be down to his last arrow.

Another piece of pottery shows how these ancient Mimbres snared birds, while still another represents two men dragging a dangerous captured animal in such a way as to prevent his attacking either one of them.

Food animals, however, predominate in the pottery pictures, and from this evidence Dr. Fewkes concludes that animal food formed a considerable part of the dietary of these ancient people. Deer, antelope, rabbits, turkeys, parrots, fishes of many sorts, turtles, frogs and insects indicate that these early Indians were good observers, clever artists and possibly drew their pictures from nature.

Their artistic work was accomplished in an isolated valley whose rivers have no outlet to the sea, and Dr. Fewkes urges additional investigations in this valley which lies midway between the Pueblo and Mexican region and shows affinities with the culture of both.

ITEMS

HOUSING shortage among prehistoric cliffdwellers may have caused America's first "back-to-the-farm" movement. A report of explorations shortly to be published by the Smithsonian Institution declares that a study of pottery from ancient apartment houses built in the cliffs of Mesa Verde National Park, Colorado, compared with that from similar dwellings in the open country lends support to this theory. The character of the pottery renders "it easy to accept the theory that the Mesa Verde caves became so crowded with buildings that their inhabitants were compelled to move out and, having constructed pueblos, to settle on the mesa tops near their farms." The pueblo ceramics show evidence of changes in style, it is pointed out, and some of the pottery from the ruins recently excavated on the mesa is almost identical with that of the cliff houses. Other pieces are of a different type indicating that these open country villages were inhabited later than the houses built in the shelter of the hills.

AN artificial body of water which will produce 50,000,000 kilowatt hours of electrical energy for industries and will irrigate over 74,000 acres of land has been created on the Tirso River in Sardinia.