

SCIENCE NEWS

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COMETS AND METEORS AROUND STARS

EVIDENCE that many, if not all, stars are surrounded by meteors and comets like those that we see in the solar system, and that they may serve as fuel to keep the stars going, is the announcement just made by Dr. Harlow Shapley, director of the Harvard College Observatory. If this is correct, it would explain how the stars may survive for a far longer time than the one hundred trillion years that astronomers have recently supposed to be their maximum life.

By means of the spectroscope, which breaks their light up into a rainbow-like spectrum, crossed by numerous dark lines and bands that indicate the constituent elements, Dr. Shapley has studied a large number of stars. Though they are of varying temperatures, and supposed to be of different ages, they all show a band which indicates the presence of cyanogen. This is a gas composed of carbon and nitrogen and which is used terrestrially for killing insects.

Probably, he believes, this cyanogen is not actually in the stars themselves, but rather is it provided by meteors and comets that surround them. Comets and meteors that have come within range of observation have been found to contain carbon and nitrogen as separate elements. When these fall into a star, the high temperature would cause the elements to combine to form cyanogen.

One important aspect of this hypothesis concerns the life of the stars. The generally accepted theory now among astronomers is that the energy of the stars comes from the actual disintegration of their matter into energy. Matter and energy, according to the ideas of modern physics, are both the same, and so one can be changed to the other. In this way, the matter in the average star will keep it running for about 100,000,000,000,000 years. However, if more and more fuel is constantly being shoveled on the stars, in the form of meteoric material, the star might survive almost indefinitely.

A NEW EXPLOSIVE

RADIUM atomite, the explosive said to be more powerful than T.N.T. or dynamite, is now engaging the attention of army engineers in Washington. The report of Lieutenant-Colonel L. M. Adams, who tested the new explosive at the California Institute of Technology at Pasadena, has just been received, and has been referred to the Board of Engineer Equipment of Troops, at Fort Humphreys.

No details of the composition or samples of the explosive have been received in Washington. Lieutenant-Colonel Adams reported that it is a light greenish powder, dry and very finely divided. The inventor, Captain H. R. Zimmer, of Los Angeles, former army officer, claims that it can be produced for one half the cost of T.N.T. It is declared more stable than T.N.T., and unaffected by dampness, a serious fault of the latter.

In the tests by Lieutenant-Colonel Adams, the power of radium atomite was compared with T.N.T. and 80 per cent. dynamite. A lead cylinder, 12½ inches in diameter, 14½ inches high, with a hole 1½ inches in diameter and 9½ inches deep, was used with each. The entire cylinders each weighed about seven hundred pounds. An ounce of the explosive was placed in the bottom of the hole and covered with three ounces of sand, then the explosive was detonated electrically.

Before explosion, the holes each had capacities of 125 cubic centimeters. T.N.T. enlarged the hole 1,002 cubic centimeters, dynamite 1,255, and radium atomite 1,370.

Tests were also made of the speed of explosion, or how fast the explosive reaction travels through it. This is about 10,721 feet per second for radium atomite, 16,082 for T.N.T. and 8,300 for 60 per cent. dynamite. For general use, it was stated by army engineers, this range makes no practical difference.

Officials of the engineer corps were unable to state whether or not the explosive will be adopted. After the board that is now considering the report is through, they may either request Captain Zimmer to furnish them with samples for additional tests or else invite him to Washington for the purpose.

STANDARDIZATION OF METERS

STANDARDIZATION of meters for gas, electricity and water was urged by W. T. Henrichson, meter inspector of the state of Texas, in a report to the Conference on Weights and Measures held in Washington. In Texas, meters are supervised both before and after installation. Testing equipment cost only \$1,481.36, but led to savings of thousands of dollars each year for the people in some communities.

Inaccuracy in meters, said Mr. Henrichson, is usually due to incompetent men and neglect on the part of the utility company rather than any deliberate intent to defraud.

Before the passage of the law, a gas company in a Texas city sought to raise rates, Mr. Henrichson related, but the city council decided that the existing rates were adequate to net a fair profit. During one of the meetings, a council member suggested that there should be other ways for the gas company to increase its earnings besides increasing the rates, no doubt having in mind increased efficiency and economy. The gas company acted on his suggestion and increased its earnings. It speeded up every meter in the entire city and increased gross receipts about 25 per cent.

On the other hand, a small gas company was on the verge of bankruptcy. After spending a week testing meters, the speaker found that 25 per cent. of those in service were not registering the gas flowing through them. A much higher percentage of the meters were "slow" and registered only a portion of the gas used. This investigation showed the directors why they were not making money.

In one community where gas bills had suddenly jumped, investigation showed that the meters were correct, but whereas the company had been delivering gas of 1,000 British thermal units per cubic foot, they were found to be delivering gas of 575 British thermal units per cubic foot. This was equivalent to speeding up all the meters about 74 per cent.

ANCIENT SKELETONS FROM ALGERIA

WHILE Cro-Magnon man ruled Europe, twenty-five thousand years ago, he had as neighbors in Africa a race who used tools and weapons like his own, but who in their bodily makeup so closely resembled men of to-day that they may fairly be called "modern." This great backward extension of the history of the "modern" type of human beings is the most significant point about the recent discovery by American and French anthropologists of a number of ancient skeletons in a shell mound at Mechta, Algeria. This opinion was expressed by Professor Fay-Cooper Cole, of the University of Chicago, in response to an inquiry by Science Service.

For the past three years Beloit College has been conducting excavations in France and North Africa, under a fund given by Dr. Frank Logan, Chicago philanthropist. Dr. George Collie, director of the museum at Beloit, has spent much time in the field, while active excavation has been carried on by graduate students in anthropology from the University of Chicago.

Last year Alonzo Pond, one of the American workers, found the skeleton of a child in a shell-heap of Cro-Magnon age at Mechta. This year another worker, Paul Nesbitt, took out three more skeletons, while previously a Frenchman named Debrugge had secured a skeleton there.

A careful study of the shell mound and its contents indicate that it seems to be like the Old Stone Age finds of Europe of twenty-five thousand years ago. No New Stone Age objects occur in the site, and no bones of any domestic animals were found—domestication of animals is a "modern" accomplishment. "We seem to be justified in saying that the site is pre-Neolithic, and is probably as old as the Aurignacian," Professor Cole concludes.

The skeletons are neither Neanderthal nor Cro-Magnon. One skull, a woman's, shows negroid characteristics, but the others appear to be rather close to the Mediterranean type, though somewhat more primitive. Fuller details will be announced when the material shall have arrived in America.

THE PROLONGATION OF LIFE

INSTEAD of using alchemy, or the numerous supposed "elixirs of life" in order to retain youth, the late Dr. A. C. Eycleshymer, of the University of Illinois Medical School, points out in a manuscript left in incomplete form by his death that the quest for youth is not less popular to-day than it has been for countless ages, but the search to-day is becoming more and more scientific, and so is coming nearer to success than any of the older processes. This article was prepared for publication in the *Scientific Monthly* by Dr. Eycleshymer's friend, Dr. E. P. Lyon.

The idea of an elixir of life dates back to Biblical times, when the "tree of life" is introduced in the Garden of Eden. Adam was sent from the Garden, "lest he put forth his hand and take also of the tree of life, and eat, and live forever." This idea that there must be somewhere a tree which was intended to preserve man from disease and death prevailed for ages.

Stars were the next attraction and it was believed that the planets possessed either good or evil qualities which were given to those born under them. Since metals were thought to be intimately associated with the planetary bodies, amulets or figures which had been cast, stamped and submitted to the influence of stars, therefore becoming charmed, became popular. Alchemy succeeded astrology. Liquid gold, when made, would be life. But it was never made. Then came blood transfusion. When in 1667, Denys, of Paris, transferred about a pound of calf's blood into the veins of a maniac, and repeated the process twice, resulting in the death of the patient, transfusion was prevented by law.

To-day, through the avenues of empirical medicine and sanitary science, the expectancy of life has been greatly increased. The average span of life was increased about four years during the seventeenth and eighteenth centuries, about eight years in the first three quarters of the nineteenth century, and about sixteen years since 1875.

"While we have thus made much progress," Dr. Eycleshymer states, "we still lack information in easily accessible fields. While there is always interest shown in plants and animals, the study of man, with a view of preserving and accentuating, in the offspring, the sterling qualities found among the ancestors, has not received serious consideration. Yet we know that heredity is one of the chief factors in longevity."

POLAR RESCUE EPICS

IF the passing hours prove that the *Italia*, with Nobile and his party aboard, is lost in the Arctic somewhere between the North Pole and Spitsbergen, there may be enacted one of the heartrending tragedies of attempted Arctic rescue such as history records. To-day, although the ice is as merciless as ever, circumstances are different from the days when Franklin was lost, when Greely and his brave band starved, or even when the more recent Wrangel Island tragedy was revealed.

In the days when Arctic explorers were limited to difficult sledging over ice, when only a few miles a day could be traveled, the rescue party knew in what general locality to search. If the *Italia's* radio remains silent and gives no clue of the location of that ill-fated ship, Amundsen and his aides in the relief expedition have a difficult task before them. A dozen dirigibles in the best of weather might scour the icy wastes without sighting the landing place of the *Italia*. If the radio brings news of Nobile and his party and gives their location, even then rescue over ice will be difficult enough.

Up until the *Italia's* latest voyage, recent aerial exploration of the Arctic has been singularly without serious mishap. But the first airplane venture pole-

ward by Amundsen and Ellsworth gave the world some anxious moments while their airplane was down in the Arctic and out of communication. When the *Norge* landed at Teller, Alaska, after its successful trip across the North Pole and the great Arctic blind spot, the news of success was slow in reaching civilization and some at that time thought that dirigible lost.

But the first attempt at Arctic exploration by air, made in 1897, ended disastrously. The Swedish balloonist, S. A. Andree, and two companions, set out for the North Pole in a large free balloon. The start was made from Danes Island, in the north of Spitsbergen, on July 11, 1897. Five tons of supplies were carried. In an hour the balloon was out of sight. That night, seven and a half hours later, a message buoy, found later, was dropped. This was the last trace of the expedition, although years afterwards various unconfirmed rumors of finding the balloon have come out of the Arctic regions of Siberia and Canada.

The Franklin expedition of 1845-48, from which not one of the 129 officers and men returned alive, is probably the most famous of Arctic tragedies. Not until a decade later did searching parties discover the fate of Sir John Franklin and his men and of their accomplishment of the Northwest Passage and other geographic discoveries.

Living in retirement in Washington to-day, there is a survivor of another rescue epic of the north. General A. W. Greely is now eighty-four. In 1881, when a lieutenant, he commanded an expedition the remnants of which three years later were rescued at the point of starvation. Notable scientific explorations were accomplished. Only six returned out of the twenty-five who started, but records, instruments and collections told the story of the efforts of those who perished.

TREATMENT OF MONGOLOID IDIOTS

MONGOLOID idiots—those baffling cases of defective reclaimed from their smiling, contented state of idiocy and in some cases they may even reach practically normal intelligence. This was the encouraging report made on June 1 by Dr. Walter Timme, of New York, before the American Association for the Study of the Feeble-minded, meeting in Atlantic City.

The cause of Mongolism and how to treat it are still children that look like flat-faced oriental dolls—may be uncertain, though it is generally recognized as a gland disorder. Dr. Timme described his theory, which traces many of the symptoms of Mongolism to faulty development or lack of development of the fore section of the pituitary gland. This gland is located at the base of the brain and its secretions enter both the blood and the cerebro-spinal fluid.

Working on this theory, Dr. Timme stated that he has been feeding Mongoloid patients pituitary substance, both of the whole gland and particularly of the fore lobe of the gland. Hypodermic injections of the gland solution have also been given and in addition the patients have been given the usual thyroid treatment.

"As a result of ten years of this work, I have brought many of my Mongoloid patients to much higher levels than we have heretofore been able to do," he said.

Some of these children, who had started in life with the prospect of remaining idiots, unable to dress themselves, talk properly or even eat like normal children, learned to do arithmetic up to multiplication by three or more figures and long division. They also learned to write letters and do oral arithmetic, which is remarkable achievement for these cases.

One of the patients, described by Dr. Timme, has attained an intelligence quotient of 90, which brings this child up to average intelligence. Not all the children treated have attained this degree of improvement, but Dr. Timme declared that "we have with these means accomplished more than by any previously known treatment, so far as I am aware."

ITEMS

No diphtheria deaths in 1927 puts Cambridge, Mass., at the head of the list in diphtheria prevention, of all the cities with populations over 100,000 in the United States. Only once in the last five years, according to the American Medical Association, has any city gone a year without a single death from diphtheria. The previous diphtheria record breaker was Duluth, Minn., in 1925. Seven cities with more than 100,000 inhabitants had no typhoid deaths last year, the medical association's statistics show. New Haven, Conn., Springfield, Mass., Yonkers, N. Y., Paterson, N. J., Richmond, Va., Canton, Ohio, Kansas City, Kan., make up the typhoid honor roll, which is the largest known since studies of typhoid death rates were started in 1913.

THE pronghorn antelope of Nevada and Oregon have been given a new lease on life with the recent acquisition made by the National Association of Audubon Societies of a 380-acre ranch in northern Nevada. These beautiful and hard-pressed animals of the semidesert regions of the West were gradually being killed off, due mainly to lax game law enforcement. At a recent national conference, the association was appointed to take the lead in securing congressional action, but political interference at the behest of nomadic sheep-herding interests caused this project to fail.

A SURVEY of two centuries of rain in England shows that the rainfall of 1927 was 124 per cent. of the normal and was exceeded by only eight other years. The records, dating back to 1727, show that the three years 1768, 1852 and 1872 were markedly wetter than 1927, with 136, 137 and 144 per cent., respectively. There was no year so dry as 1921 with only 69 per cent. of the normal since 1788. The reports show that there were nine consecutive wet years from 1875 to 1883, while the longest run of dry years was only six, from 1800 to 1805. A remarkable feature of the rainfall of recent years is that in all but two of the last fourteen years the fall has been below average.