

planet) the event is termed an occultation. As it moves around the sky each month, the moon often occults stars, but mostly they are faint ones, often too faint to be seen without a telescope. Occultations of bright stars are rather uncommon. In fact, there are only four first-magnitude stars—Aldebaran, Regulus, Spica and Antares—which are in the part of the sky through which the moon moves. Hence only these can ever be occulted.

On Jan. 10, at 4:00 a.m., E.S.T., the moon will be in a phase between first quarter and full, and will occult Aldebaran, the bright star in Taurus, the bull. Each month the path of the moon across the sky is nearly the same as the preceding month, so this is one of a series of occultations of Aldebaran, which began last September, and occurs 13 times in 1960. Of these, eight will be visible from North America. Amateur astronomers will have an interesting time watching them. Several will happen in convenient evening hours.

Celestial Time Table for January, 1960

Jan. EST

- 5 1:53 p.m. Moon in first quarter.
- 10 4:00 a.m. Moon occults Aldebaran.
8:00 a.m. Moon farthest; distance 252,-
300 miles.
- 13 6:51 p.m. Full moon.
- 14 1:34 a.m. Algol (variable star in Perseus) at minimum brightness.
- 16 10:23 p.m. Algol at minimum.
- 19 7:12 p.m. Algol at minimum.
- 21 6:00 a.m. Venus passes Jupiter.
10:01 a.m. Moon in last quarter.
- 25 3:00 a.m. Moon passes Jupiter.
10:00 a.m. Moon passes Venus.
- 26 5:00 a.m. Moon nearest, distance 224,-
800 miles.
- 28 1:16 a.m. New moon.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, December 26, 1959

PUBLIC HEALTH

Many Cardiac Patients Can Get Life Insurance

MANY PERSONS who have heart disease, including even those who have recovered from a heart attack, can now get life insurance.

The reason for this is that life expectancy in persons with varying types of heart disease has been shown to be "vastly better" than was formerly supposed, two physicians have reported.

This knowledge has been derived from long-term studies and experience of both insurance companies and practicing physicians, Drs. Richard S. Gubner and Harry E. Ungerleider of the Equitable Life Assurance Society report in *Modern Concepts of Cardiovascular Disease* (Dec.), published monthly by the American Heart Association.

Persons born with heart defects comprise another group of cardiacs who are becoming increasingly insurable, the doctors say.

Science News Letter, December 26, 1959

PUBLIC HEALTH

Foresee Isotope Problems

WHEN APPLYING radioisotopes for industrial and other purposes, scientists must sharply distinguish between isotopes produced by irradiation and separated fission products, the conference on "The Disposal of Radioactive Wastes," organized jointly by the International Atomic Energy Agency and UNESCO, was told by the American specialist, Dr. A. W. Kenney of the Du Pont Co.

He pointed out that no disposal problem need arise if the isotope used is one which was produced by irradiation in a reactor or an atomic accelerator. Such isotopes, he said, can be returned after a few half lives, in order to be re-irradiated. The re-irradiated source can then again be applied and since this process of re-irradiation can be repeated time and time again, radioactive isotopes having been formed by irradiation practically never constitute a waste.

Separated fission products from nuclear reactors, on the other hand, which are widely used in industry and medicine today cannot be reactivated and therefore do present a great problem in regard to the disposal of this waste.

Dr. Kenney demanded that a clear labeling should always give information about the origin of an isotope, in order to know whether the source was produced by irradiation and thus can be reactivated, or whether it is a fission product, which finally will become a waste. Already today, he declared, sources of both types may be used for the same purpose. Thus in well-logging, both antimony 122 and polonium 210 are begin used as neutron sources. Antimony 122, being an irradiation product, can be reactivated, while polonium 210, a fission product, cannot.

Science News Letter, December 26, 1959

GENETICS

Relate Growth to Tumors

IT IS NOT how fat the mice are, but how well-developed their bones and muscles are that appears to be related to lung tumors in mice.

There is a "highly significant" relationship between the number of lung tumors and body length, muscle weight and bone length, two researchers at the National Cancer Institute, Bethesda, Md., report. A similar relationship may exist between human body types and cancer, they suggest.

By crossing two strains of mice, one genetically highly susceptible to pulmonary tumors while the other carried the recessive gene for obesity, Drs. George Vlahakis and W. E. Heston obtained offspring with both characteristics. Nearly all the mice of the second generation had lung tumors, but the non-obese mice had almost twice as many as the obese group.

Although the obese animals weighed more than their "normal" brothers and

sisters, analysis showed they were actually smaller animals, the researchers point out in the current issue of *The Journal of Heredity* (50, 99, May-June, 1959).

Measurements taken included the femur or thighbone and the gastrocnemius, the large muscle in the calf of the leg. The mice were also measured from the tips of their noses to the tips of their tails. In all cases the obese mice were significantly smaller in these three body measurements.

Noting that earlier studies have shown that "women most likely to develop breast cancer are those with good skeletal and muscular development with some tendency toward obesity rather than the very obese women," Drs. Vlahakis and Heston suggest that "it would be interesting to know what correlations exist in man in respect to other neoplasms, particularly lung cancer," and body types.

Science News Letter, December 26, 1959

OPERATIONS RESEARCH

Computers for Baseball

AN ELECTRONIC COMPUTER has been used to decide whether a sacrifice, stolen base or intentional walk is the best baseball strategy under given conditions.

Richard E. Trueman of the University of California at Los Angeles told the Operations Research Society of America meeting in Pasadena, Calif., that an International Business Machines 709 computer had been instructed how to "play" individual innings.

Batting statistics of a representative major league lineup form the starting point. From these, tables are made showing the probability of selecting each of 13

possible plays. Individual innings are then "played" by the computer, using random numbers to select the plays.

Some 5,000 innings are played for each possible combination of initial conditions, Mr. Trueman reported. The initial conditions can be varied according to the lead-off batter in the inning, location of base runners, and number of outs.

For each initial condition, statistics are kept on the probability of scoring a given number of runs, the average number of runs scored, and the probability of a double play occurring.

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