To Our Readers

Last year's special double-sized issue on astronomy, published at the end of the summer, was so well received that we are preparing another such issue this year. It will combine the Aug. 24 and Aug. 31 issues of SCIENCE NEWS into one double-sized issue presenting news stories and illustrated feature articles in a variety of fields of astronomy. It will be mailed on Aug. 30.

—The Editor

more persons between 114 and 116 than between 110 and 114. And other studies showed a decrease in the percentage dying as they reached each higher age bracket instead of the expected increase. Also, although women have longer average life spans than men, the superold are usually men. "It is possible to suggest," Medvedev says, "that men are more likely to try to exaggerate their real ages than are women."

He presents two more bits of evidence. The distribution of centenarians is not random—usually one village has one centenarian. And psychological and biochemical studies show "the function and metabolism of longevous people of 100-110 years are on the same level as is usual for people of 55-60 years." Research on the superold in other countries does not usually show such paradoxes, he says.

The exaggerated claims are sometimes amusing and implausible, and have sometimes led to embarrassment. One couple from Misabecia, Rustam Mamedov and his wife, claim to be 142 and 116 respectively. They say their youngest son was born when he was 107 and she was 83. One man from Yakutia received great publicity during the 1959 census when he gave his age as 130. But articles reaching his Ukrainian home village brought a swift response from those who knew him when. A World War I deserter, it seems he had adopted his father's identification papers and was really only 78 years old.

Medvedev points to three social and political factors that have lead to these exaggerated claims. First, the older a person is, the more respect and honor he receives in his community. Local, regional and even national media have focused glowing attention on the centenarians. Second, the state program of political propaganda frequently refers to the large number of centenarians and "considers it to be a special social achievement of the Soviet Union." Finally, Stalin was from that area and grew increasingly fond of the legends as he grew older. Local authorities searched for area centenarians to prove the belief, and rumor became institutionalized, Medvedev says. □

Accelerators in tandem: Bevalac

Even before Lawrence Berkeley Laboratory's aging Bevatron gained a new lease on life by becoming the first high-energy heavy-ion accelerator (SN: 10/16/71, p. 266), scientists at the hilly laboratory were looking a few hundred yards up the slope toward where the low-energy HILAC accelerator was being rebuilt to produce a dense flux of heavy ions. Suppose an evacuated tube, with magnets at its bends, were built between the two machines; could the new SuperHILAC then act as a source of ions for the Bevatron, creating a machine that would accelerate large numbers of heavy nuclei to very high energies and open new realms of experimentation in physics and medicine?

Yes, it could. In the middle of the night on Aug. 1, a beam of carbon ions from the SuperHILAC was accelerated to 2.1 GeV per nucleon by the Bevatron, and the first "Bevalac" experiment got under way. A variety of questions were already waiting for a chance to be tested, based on the limited experience gained from the component machines.

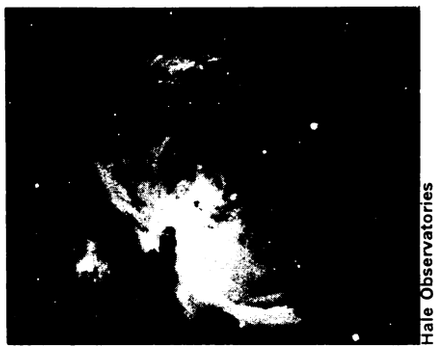
From the intense, but low-powered, beam of the SuperHILAC, physicists had found a discrepancy between observation and theory concerning the radioactive decay of certain partially ionized atoms. The Bevalac will allow pursuit of these experiments at higher energies.

Physicians have become increasingly interested in the high-energy particles obtainable in small quantities from the rejuvenated Bevatron, for they can be used to kill tumors with far greater precision than relatively more clumsy and dangerous X-ray treatment. The Bevalac will provide an intense enough beam for practical therapeutic use.

In one sense, the new machine will bring the heavens "down to earth," for the accelerated heavy nuclei are essentially artificial cosmic rays. The development of intense beams of these ions will allow duplication of intergalactic particle collisions in the laboratory.

Finally, theoretician T. D. Lee excited Berkeley experimentalists recently by suggesting that if an element as heavy as lead could be accelerated to very high energies and caused to collide with some equally heavy material, a new "condensed state" of matter might be formed. Such an experiment must wait, however, for the next proposed step in the Bevalac system. Laboratory scientists say that for a relatively modest sum, the vacuum system between the two components could be improved enough to transport nuclei this heavy.

Orion nebula and molecule No. 30



Hale Observatories

The great molecular cloud, the nebula, in the constellation Orion is a favorite spot for those interested in the dust and molecular gases of interstellar space. In the variety of molecules discovered there its only rivals are the clouds in Sagittarius that lie toward the center of the galaxy. Many molecular species have been found only in Orion and Sagittarius.

Orion is thus a good place to look for new molecules. Scientists now report the discovery of the 30th interstellar molecule, a new addition to the long list of organic molecules in the interstellar clouds. It is a nine-atom molecule, dimethyl ether, $(CH_3)_2O$.

The new molecule was found by a group led by L. E. Snyder of the Joint Institute for Laboratory Astrophysics of the University of Colorado and the National Bureau of Standards at Boulder, Colo. The instrument used was the 11-meter dish of the National Radio Astronomy Observatory. The report is in the ASTROPHYSICAL JOURNAL (Vol. 191, p. L79).

Three characteristic frequencies of dimethyl ether were recorded at frequencies of 90.9, 86.2 and 31.1 gigahertz. Taken together the measurements indicate either that there are collections of dimethyl ether molecules in Orion moving at two distinct velocities or that somehow certain internal motions of the molecule are preferentially energized.

Because dimethyl ether has a particular symmetry of construction and a large probability of collision with other molecules it should be useful for studying how interstellar gas molecules are energetically pumped. Some samples of interstellar gas show maser emission, and this requires a mechanism for pumping them with energy. Just what this mechanism is is one of the great mysteries of molecular astronomy.

One of the most ubiquitous of the interstellar molecules is carbon dioxide. It exists over quite a large area in Orion, and it is therefore a good medium from which to get some idea of the over-all configuration of the cloud.