

PHYSICS-ASTRONOMY

Atom Started Universe

Whole universe began as explosion of a single giant atom two billion years ago, is the suggestion of a Belgian scientist. Uranium bearing rocks support theory.

► ATOMIC explosions that wipe out whole cities in an instant seem awesome on a human, planetary scale. Seen from a cosmic grandstand, however, they are scarcely even sparks from a single powder-grain in the grand pyrotechnics of the universe.

Indeed, according to one bold theory, the whole visible universe, with great pinwheel galaxies containing millions of flaming stars, and with possible swarms of planets like the earth that have never been seen and only lately have been rather vaguely guessed at, got its start as a single super-atom of unimaginable energy content, that exploded a couple of billions of years ago—and is still exploding. All the energies of which we are aware, from the bursting brilliance of giant stars that far outshine our sun down to the feeblest kicks of a dying protozoon, are but the varied expressions of that vast primal explosion, if this hypothesis holds good.

The idea started with the notion of an expanding universe. Light from remote stars and galaxies, caught in astronomers' instruments, is redder than it theoretically should be. One explanation of this so-called red shift is that all parts of the visible starry universe are rushing away from each other at terrific speeds—much faster than the pieces of an exploding bomb.

About 15 years ago a young Belgian priest-scientist, the Abbé Georges Lemaitre, boldly suggested a backward extension of this expanding or exploding universe. Mathematical calculations carried him back to a beginning-point where neither time nor space existed, and all the matter that eventually came to constitute all the stars and planets was present only potentially, as terrifically high-level energy in one single cosmic atom.

Chemical elements as we know them are discussed in terms of their atomic weights and atomic numbers, which are expressions of the number of electrons spinning around the sunlike nucleus or atomic heart. Since the number of electrons in the smallest pinpoint of ordinary matter—a single dust-grain, for example—must be reckoned in trillions, the atomic number of this primordial atom

is simply unimaginable. We have to call it infinity and let it go at that.

What the first atomic explosion was like is also something that defies human imagination. What set it off is doubtless forever beyond our guessing. Theoretical considerations have led the Abbé Lemaitre to a tentative conclusion that it must have occurred something like two billion years ago. Analysis of uranium-containing rocks from the earth's oldest known geological formations are of about that age, by other, independent methods of analysis and calculation. This would seem to require more time than the Lemaitre hypothesis allows; but it has been suggested that perhaps in the beginning the evolution of cosmic materials went on at a much more rapid rate, and that by the time the processes we know as geology could begin events could be ticked off by a slower clock.

If these dizzying ideas are valid, our most terrifying "city-buster" bombs are made of mere pinches of debris from the universe's first enormous outburst, scraped up out of overlooked corners like a winter's last snowballs.

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NUTRITION

Saccharin Harmless as Ordinarily Used

► IS IT safe to use saccharin instead of sugar for sweetening tea, coffee, lemonade and some desserts? Since the sugar shortage is expected to continue, many are probably wondering about this and many may have found it difficult to get any specific information on the subject.

The reason for the vagueness is that apparently only a few studies of saccharin's effect on the body have been made. About 30 years ago the Secretary of Agriculture asked a referee board of consulting scientific experts in the Department of Agriculture to look into the matter. This board reported that in small quantities saccharin was not injurious to normal healthy grown persons so far as could be determined by methods then available for the study. The quantity they stated to be harmless was about three-tenths of a gram per day. This



ATOMIC PARTICLE—According to the Lemaitre hypothesis, the entire universe, of which this galaxy or spiral nebula is a very small part, all started out compressed in a single cosmic atom that 2,000,000,000 years ago started the explosion that is still going on.

would be about four and one-half grains.

More than this and especially amounts over one gram, or about 15½ grains, taken daily for months might bring on serious digestive disturbances, the board reported.

Saccharin has long been used as a sugar substitute by diabetics and patients with other illnesses. This has usually been on medical advice and probably with the amounts to be used specified by the patient's physician.

Home economists of the Department of Agriculture advise against the use of saccharin as a sugar substitute in cooking and particularly in canning because such use is likely to give the foods a bitter flavor.

In 1937 Dr. W. W. Bauer, director of the bureau of health education of the American Medical Association, answered a question about possible injurious effects of saccharin by stating that it "is quite harmless in the amount ordinarily used."

The substance is a coal-tar product which was discovered accidentally in the course of investigations by two American chemists, Ira Remsen and C. Fahlgberg, at the Johns Hopkins University. It is from 300 to 500 times as sweet as sugar.

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