

Hot gases drawn out into a gigantic filament by such a glancing encounter between stars would explode just as a deep sea fish bursts when brought to the surface and released from the high pressure surrounding it, reasoned Dr. Lyman Spitzer, Jr., also of Princeton. Instead of forming solid bodies like the planets, his calculations showed, a stellar encounter would simply produce an extended gaseous nebula around one or more of the stars involved.

### Theory Under Fire

As you would expect, critical astronomers are already trying to puncture holes in the new Dust Cloud theory, tentatively suggested about a year ago. During the last year it has been further developed, and many details cleared up. Today Dr. Whipple spends much of his spare time dreaming and figuring out ways to make the hypothesis answer all questions.

The planets, he elaborates, were given a final "bath of flame," just before they developed as we know them today. This was particularly true of Mercury and Venus, nearer the sun than the earth.

This intense heat probably lasted only a few years. But during this time it burned up whatever atmosphere may have surrounded Mercury and Venus, and dried out much of that on the more

distant planets. Those nearer the sun, particularly Mercury, also probably shriveled up through loss of considerable matter as well as atmosphere.

The earth had long ceased to be gaseous when it was submitted to this intense heat. A completely gaseous earth could probably not have survived. Instead it probably was molten during this phase of its development.

As more is learned about the universe around us, the greater will be our knowledge of how our own solar system was born. When we look at one of those small, dense dust clouds that fascinate Dutch-born Dr. Bart J. Bok of Harvard Observatory, we may be watching the birth of another solar system. When Dr. Spitzer figures out another step in the process by which individual atoms stick together to form minute solid particles, he may be explaining how our own solar system began.

Exactly what happened 2,000,000,000 to 3,000,000,000 years ago, when our solar system was created, may not be known during our lifetime. The Dust Cloud theory probably isn't the final answer. But it may be another stone in the path that leads to a completely satisfactory theory. An explanation of the evolution of the solar system is itself slowly being evolved.

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animals' skin. At the time of the report it had been given to 85 cholera patients in 27 villages.

Giving the drug to other residents of the villages kept them from becoming infected. The Indian scientists emphasize the importance of this preventive aspect of the drug in addition to its curative value.

Development of this new anti-cholera drug started with a finding of Dr. Bhatnagar's in 1939. This was that cholera germs were killed in the test tube in less than half an hour by a 10% solution of hexa-methylene-tetra-amine in normal salt solution. Further studies, although interrupted by the war, led to developments of hopeful compounds made by linking hexamines to a sulfa drug.

"A chance conversation with the scientific department of Ciba," the Swiss drug manufacturing house at Basle, the scientists report, led to the Swiss firm developing the compound now known as "6257."

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### AGRICULTURE

## World Food Crisis Eased FAO Committee Reports

➤ THE hungry world is not suddenly going to be well fed, but there seem to be fair indications that it will not have to pull its belt in quite so tight in 1948 as it did in 1947. The report of the International Emergency Food Committee of FAO lists three developments, unforeseen six months ago, that have eased the world food crisis "and warrant cautious optimism for the future." They are:

1. An unusually mild winter in Europe;
2. Record harvests in Australia, which

### MEDICINE

# New Drug Checks Cholera

This sulfa drug, known as "6257", is a powerful killer of cholera germs. It also protects the healthy from infection, Indian scientists find.

➤ A NEW sulfa drug that cut cholera deaths from more than 60 to only four per hundred cases is announced by four Indian scientists in the journal, *Nature*, (March 13). The scientists are Drs. S. S. Bhatnagar, F. Fernandes, J. De Sa and P. V. Divekar of St. Xavier's College, Bombay.

The drug is known as "6257" for short. It is a condensation product of two molecules of a sulfa drug, 2 p-aminobenzene sulfonamidothiazole, and three molecules of formaldehyde.

Preliminary tests showed that it was a powerful killer of cholera germs in the test tube. When injected under the skin of mice it gave 100% protection against cholera.

It was then tried in patients in the

Tanjore District of South India where there were cases of Asiatic cholera in many villages. The patients were treated in their homes without any other medical aid. Most of them were under-nourished women and children who had been vomiting, having diarrhea and suppression of kidney function.

Vomiting was invariably stopped and the diarrhea much reduced within six hours after treatment with the new sulfa drug was started. Kidney functioning was restored by the ninth hour. By the fifth day, the cholera germs were absent from the body wastes. The drug was given by mouth morning and evening for five days, although when given by mouth to the mice it had been less effective than when injected under the

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are resulting in greatly expanded exports of cereals;

3. Doubling of monthly grain exports from Argentina, supported by much larger crop yields than could normally be counted upon.

A fourth, but expected, factor is the ability of the USSR to make substantial exports of cereals. Russian agricultural authorities are also quoted as promising increased food exports if the crop season continues favorable.

The mild weather in Europe helped not only through lessening of direct food demands but through improvement of winter pasture for cattle, thereby decreasing the need for diversion of grain for feeding purposes and at the same time increasing the supply of dairy products.

While a repetition of the immense wheat crop of 1947 in the United States is not expected this year, prospects for a continuation of large supplies of wheat from the Southern Hemisphere seem good. It also seems reasonable to expect an improvement on the 1947 corn crop in this country.

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#### CHEMISTRY

## Revivifying Bone Char

➤ BONE char research by the National Bureau of Standards is of particular interest to sugar refiners but the public may benefit if lower prices for this important food result. Vast quantities of bone char are used in filtering at the refineries. The principal problem is how to revivify it, that is, how to treat it so that it can be used over and over again.

Bone char, known also as animal black and animal charcoal, is obtained by the destructive distillation of organic matter at high temperature.

Although large-scale revivification of bone char by a process involving successive washing, drying, and heating has been employed in cane sugar refineries for about 50 years, improvements in revivification methods have not kept pace with modern trends in industrial operations, the Bureau states. The gradual exhaustion of adsorptive properties with use and the small loss of dust formed must be compensated for by a small and steady addition of new char.

Bone char is a granular solid adsorbent used in great quantities for the decolorization and purification of raw sugar. This is accomplished by passing the

## Do You Know?

The word *dinosaur*, loosely applied to any ancient large reptile, is correctly applicable to two orders of reptiles with scientific names, Saurischia and Ornithischia, one of which means "reptile hips" and the other "bird hips."

In the home *oil-burner* furnace, light-weight firebrick is said to conserve fuel; oil does not burn completely until the firebox is hot and the light-weight brick heats up more quickly than ordinary firebrick.

*Collars of steel* were worn by men in colonial days, it is said; they were enameled white and could be instantly cleaned with a wet rag.

A *camera* that contains a tiny furnace has been developed to take closeup pictures of hot metals.

A *radar-proof container* for photoflash bulbs has been developed.

An *egg* has been called one of nature's best packages of food value.

sugar liquor through a number of filters. In some refineries some of these filters are 10 feet in diameter and 20 feet deep. The char becomes exhausted after repeated use. There is a reduction in surface area of the granules.

The Bureau's studies are to obtain increased understanding of the properties of the commercial solid adsorbents, particularly bone char, and their basic behavior as related to structure. It is a long-range cooperative program of research initiated in 1939 and supported by sugar refiners and bone char manufacturers. It is under the direction of Dr. Victor R. Deitz of the Bureau staff.

The structure of bone char has been investigated by means of X-ray diffraction spectra; electron micrographs; density determinations; measurements of surface area available to known gases; chemical analysis; and studies of specific heat, heats of wetting, and heats of combustion. Complete information on the structure of the revivified char delivered to the filter and that of the exhausted char after filtration is necessary to determine the over-all efficiency of revivification.

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