



### The Bumblebee's Sleep

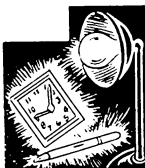
➤ A LITTLE later in emerging from winter quarters than their smaller kindred, the bumblebees should be in evidence by now. Why bumblebees fare forth later than their semi-domestic cousins, the honey-bees, cannot be stated definitely. It may be because the bumblebee's best food plants have not yet developed their flowers, or it may be simply because the big insect, being a ground-dweller, is not warmed up as early as the hive-inhabiting honey-bees.

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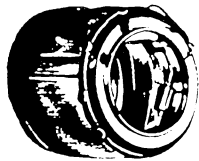
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The bumblebee is a semi-solitary insect to begin with. New colonies are founded by solitary females that fly away from the parent hive in autumn. The female bees then proceed to dig themselves in, though winter is still remote. They sleep in their little burrows more than half-way round the calendar. While the weather is still warm, they do not sink into the deep and death-like slumber of true hibernation from which they are now emerging. After the first frost, however, the female bumblebees remain profoundly unconscious until spring warmth arouses them. This deep sleep of hibernation is quite probably a matter of physical economy, for the bee must depend on the food stored in her own body tissues, plus a gorged crop from a last drink at the honey pots of the home nest.

About now, the bee fares forth to find some nectar on which to feed, then proceeds to hunt a new homesite—frequently in an abandoned burrow of some other animal or a natural crack. There she digs out a chamber more commodious than her winter bedroom, and on the floor of this sets up waxen household pots, which she stocks with food. Unlike the honey-bee queen, she is, at this stage of her existence, very much a worker; the honey-bee queen is simply a maternal mechanism, and cannot work at all—can scarcely even feed herself.

Having got the nucleus of a home started, the bumblebee queen lays her first few eggs, and when the hungry little grubs hatch from them she becomes an even more zealous worker than before. Only when she has this first small squad of workers brought up and ready to go forth and seek the community bread and honey does she retire like a lady, and thenceforth devote herself strictly to the business of being an ancestor.

At one time it was thought that only bumblebees could pollinate red clover. Scientists have now found, however, that this is not the case. Although the honey-bee does not have the equipment to get at red clover's nectar, when gathering pollen it serves as an effective means of pollinating this crop. And a good thing, too, for the giant bumblebee grows more scarce each year.

Science News Letter, April 21, 1951

#### TECHNOLOGY

### Alcohol-Water Shots Pep Up Auto Engines

➤ AUTO ENGINES are pepped up by a shot of alcohol mixed with water.

When warmed up engines are laboring under heavy loads, 75 octane fuel can be made to do the work of 90 octane gasoline by the alcohol-water injections reported to the American Chemical Society meeting in Cleveland by J. C. Porter and Richard Wiebe of the U. S. Department of Agriculture's Northern Regional Research Laboratory.

Science News Letter, April 21, 1951

#### INVENTION

### Kapitza Receives Patent For Liquid Oxygen Method

➤ PETER Leonidovitch Kapitza has been awarded American patent 2,548,377 for a method and means for producing liquid oxygen or liquid air rich in oxygen. It is a process for obtaining oxygen from the air by the separation of the nitrogen and oxygen of which the atmosphere is mainly composed.

The invention utilizes low pressures of from five to ten atmospheres and turbine expansion engines, which create the very low temperature required to liquefy part of the air passing through the apparatus. The method is particularly advantageous because of the use of a highly efficient type of turbine expansion engine. The cost of producing oxygen by it is claimed much reduced as compared with costs by other known methods.

Science News Letter, April 21, 1951

#### ENGINEERING

### Geysers Yield Electricity For Italian Industry

➤ ANCIENT GEYSERS near Florence, Italy, known to man for 2,000 years, are producing electricity for Italian industry again after the restoration of plants destroyed by retreating Germans in 1944.

Most of the power comes from drilled wells, not from natural geysers, Giuseppe Donata of Ercole Marelli and Company told the American Society of Mechanical Engineers meeting, Atlanta, Ga. Before World War II, some 140 wells had been drilled. Now new wells are being drilled, and with new turbogenerators just completed the kilowatt output is double that of prewar days.

These plants generate electricity from what seem to be inexhaustible torrents of natural steam from deep in the earth. The flow of steam is constant, providing continuous reliable power. The steam has a temperature of from 290 to 400 degrees Fahrenheit, and a pressure between 71 and 390 pounds per square inch.

Science News Letter, April 21, 1951

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