TECHNOLOGY

"Brain" Analyzes English

➤ ENGLISH SENTENCES can be put together in an almost infinite number of basic ways, a study with an electronic "brain" has shown.

With the aim of making patent searches by computing machine and of machine translation of languages, two scientists at the National Bureau of Standards analyzed the structures of 550 English sentences. In each new batch of 50, they found about the same number of new basic patterns.

Drs. R. B. Thomas and P. I. Herzbrun are now analyzing another, larger sample of English sentences to see if each group of 50 continues to show 30 or more new basic forms.

Although an infinite number of different sentence structures is possible within the scope of the English language, it would be expected that some of these structures would be used much more frequently than others and account for the bulk of sentences actually used. Since information about such occurrences is of interest to scientists, writers and teachers, the Bureau scientists undertook their exploratory program, supported by the U. S. Patent Office.

The Bureau's interest in language structure stems from the need for making English "understandable" to a computer.

Drs. Thomas and Herzbrun used the Bureau's computer, SEAC, to analyze the 550 sentences selected at random from scientific journals and books. They found the maximum number of times any one basic pattern occurred was only 12, and this only for each of two structures. These were the simple ones, "The dog has run across the street," and "The dog with floppy ears has run across the street."

In the 550 sentences, 335 different kinds of sentence structure were found.

Most of the survey work was actually performed by the computer. The preliminary coding, however, was done by hand because there is not yet any known method for teaching the computer to make a choice among the many possible interpretations of an ambiguous phrasing. In fact, one of the study's aims is to learn how to instruct the machine to make such choices.

The Bureau scientists were surprised at the amount of ambiguity they found in their analysis, since all sentences studied were written by scientists "supposedly disciplined in the careful definition and use of terms."

Once the data were fed into the electronic "brain," the mathematical calculations took only about 30 minutes.

A report of the English syntax survey appears in the National Bureau of Standards *Technical News Bulletin* (June).

Science News Letter, June 29, 1957

GEOPHYSICS

Test Satellite Observers

➤ A PLUMBER'S PLUNGER equipped with a toned-down flashlight to simulate an earth satellite was towed on a 100-foot wire behind a light plane in the first successful test for checking the alertness of ground observing teams.

The practice run for Operation Moonwatch, the visual observation program for the earth satellite, will be followed by a nation-wide alert some time before mid-July.

Two observing teams at sites about 15 miles from Washington, D. C., spotted the very faint light attached to the bathroom plunger. The plane was flown at about 108 miles per hour at an altitude of 7,000 feet. The "poor man's satellite" followed the airplane across the observer's field of view by some six seconds.

The observing teams lined up in a north-south direction, each watching a small patch of the sky that overlapped the region covered by those ahead and behind him. When the simulated satellite was spotted, and usually only two saw it, the exact time of the observation was noted.

The spotters are dedicated amateurs willing to get out of bed, when the earth satellites are launched, at two-thirty in the morning to make dawn observations. The real satellites will be visible only immediately after dusk and immediately before dawn, when it is dark on earth but the sun still shines at the 200- to 1,500-mile altitudes predicted for their orbits.

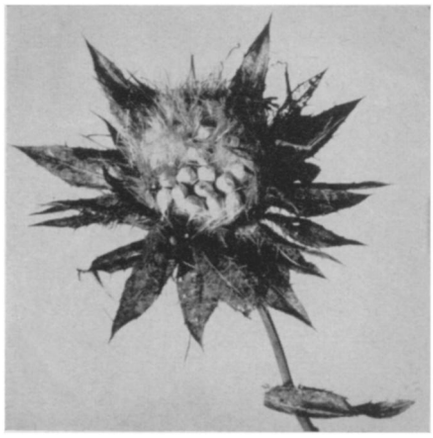
When practice turns to reality, the most important contributions made by these observing teams, of which there are about 80 in the entire country, will be the first sightings as a satellite starts its earth-circling path and the last before it spirals toward earth to burn up in the atmosphere.

The mock satellite had a magnitude of six, too faint to be seen without optical aid.

Use of the plumbing device, which can be made for about $2.50, to simulate the satellite and towing the object by a light plane at relatively low altitudes eliminated one difficulty found when high-flying jet planes were tried: making arrangements for safe flight with civil aeronautics authorities is less cumbersome. The reason is the light planes keep their running lights on because of the time lag between plane passage over the station and the flashlight, while the jet planes had to fly without lights in order not to spoil the test.

Dr. Armand Spitz, coordinator of the visual observation program, said he was "very pleased" with results of the test.

Science News Letter, June 29, 1957



SAFFLOWER SEEDS—Seeds from this thistlelike herb contain a high percentage of linoleic acid, an essential unsaturated fatty acid. Medical evidence indicates that these fatty acids are beneficial in treating atherosclerosis.

MEDICINE

Safflower Oil Compound Treats Atherosclerosis

➤ A NEW MEDICINAL compound, containing oil pressed from safflower, grown in this country primarily as a paint vehicle, is being offered physicians by Abbott Laboratories, North Chicago, for use in treating high levels of cholesterol in the blood.

Based on the reports that unsaturated fatty acids decrease cholesterol levels, the material, called Saff, rich in this kind of fat, is offered as an addition to food. The oil has been used as food since the time of the Pharoahs.

Atherosclerosis, characterized by a thickening and fatty degeneration of the inner coat of the arteries, is a major killer. High cholesterol blood levels are associated with the disease.

Science News Letter, June 29, 1957

FOOD TECHNOLOGY

Year Round Fresh Peach Ice Cream Promised

➤ THE SECRET of what makes a fresh, juicy peach taste so good has been captured, reports the U. S. Department of Agriculture in Washington.

A puree concentrate and a frozen nectar concentrate have been made by a process that preserves and concentrates the volatile flavor essences of the peach. Usually these flavoring materials evaporate when the crushed fruit is exposed to the air in processing. The USDA scientists also report the fruit is treated to prevent its turning brown when exposed to air.

When the new products are used commercially, they will probably be combined with pieces of the fruit for eye appeal as well as taste appeal.

Science News Letter, June 29, 1957