

## Cooling Fluid

Automobile and airplane engines run most efficiently at a temperature which would instantly boil away their cooling water, Gerhardt W. Frank, air corps engineer at Wright Field, has found.

Using ethylene glycol as the cooling liquid, Mr. Frank found that a temperature of 285 degrees Fahrenheit was reached in a full throttle test on an airplane engine. Water, commonly used as the cooling agent, would have boiled away at 212 degrees. Ethylene glycol, which is sold as an auto anti-freeze solution, boils at 387 degrees.

A power loss of three per cent. caused by the high temperature was more than compensated for by a better fuel economy and reduction of radiator size, cooling liquid required, engine weight and wind resistance.

*Engineering*

*Science News-Letter, January 25, 1930*

## Honored

Dr. J. S. Plaskett, director of the Dominion Astrophysical Observatory at Victoria, B. C., is to be awarded the gold medal of the Royal Astronomical Society, it was announced before the society's meeting in London. Given annually to some outstanding astronomer, the medal represents one of the highest honors that can come to a student of the stars.

The citation is to Dr. Plaskett "for his valuable observations of stellar radial velocities, and the important conclusions derived from them."

Dr. Plaskett was placed in charge of the work in astrophysics at the Dominion Observatory, Ottawa, when that institution was founded in 1905. With a 15-inch refracting telescope, he began determinations of the radial velocities of stars, that is, their motions toward or away from the earth. This is done by studying the amount of the minute displacements of the dark lines that appear in their spectra when their light is analyzed with the spectroscope.

As the 15-inch telescope was too small for the best results in this work, the Canadian Government ordered a 72-inch reflecting telescope, which was built in the United States and completed in 1918. Then it was the world's largest telescope, but about a year later the 100-inch at Mt. Wilson, California, was completed, taking the honor, which it still holds. The 72-inch was installed at a new observatory at Victoria, and Dr. Plaskett was made director.

In the first series of stars studied

with this instrument, about 200 previously unknown double stars were revealed by the spectroscope. A second series of 1500 stars is still being observed, though several other researches are under way besides the measurements of the stars' radial velocities.

The Royal Astronomical Society has also selected Dr. Plaskett to give the George Darwin lecture a little later in the year. The lecture is given annually in memory of Sir George Darwin, famous astronomer and second son of Charles Darwin.

*Astronomy*

*Science News-Letter, January 25, 1930*

## Sue for Noise

The day may not be far distant when real estate owners will recover at law for damages caused by clanking street cars or pounding trucks and busses, predicts Stephen E. Slocum, prominent consulting engineer, in a recent issue of the *Engineering News-Record*.

Legal proceedings have been successful against the smoke nuisance, Mr. Slocum points out; why not against the noise nuisance?

In big cities, noise, or vibration, has increased to such an extent that not only are tall buildings endangered, but the health and sanity of the people are menaced, he says.

*Engineering*

*Science News-Letter, January 25, 1930*

## Manna

The manna which the children of Israel ate during their sojourn in the Sinai wilderness was the sap of a desert shrub, the tamarix, drawn off and predigested by insects and dried to hardness in the desert air.

The vexed question of just what was their food, which seemed miraculous to the hungry refugees from Pharaoh's wrath, has been investigated by a special expedition sent out by the Hebrew University of Jerusalem, under the leadership of Dr. F. S. Bodenheimer and Dr. O. Theodor. A brief report of their results has been sent to *Nature*.

There has always been a dispute among scholars as to whether manna was an edible lichen, a low form of plant life that grows on the desert soil of the Sinai region, or whether it was the hardened sweet sap of the tamarix shrub. The studies of the expedition established that it is the same thing known elsewhere as "honey-dew"—the sap of the plant drawn off by aphids and exuded from their bodies. It is produced by one

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or two species of aphids on a single species of tamarix in sufficient quantity to form large drops that harden into sweetish grains of solid substance. Chemical analysis showed that it contains three varieties of sugar, as well as other compounds.

The honey-dew that turns into manna is formed from the downward current of sap that bears the food substances made in the leaves toward the roots of the plant. The investigators proved this by ringing the bark of branches on which the aphids were feeding. When the bark was ringed below them they kept on producing manna as though nothing had happened. But when the ring was cut above them, stopping the downward food bearing sap flow, the manna production also stopped.

*Botany*

*Science News-Letter, January 25, 1930*

## Rain

It rained in practically every state in the Union one day recently. The Daily Weather map for Jan. 14 is shaded from the Atlantic to the Pacific and from Canada to Mexico and the Gulf.

Although as little as one one-hundredth of an inch precipitation is reported, it is very unusual for rain to fall in every state during 24 hours, the U. S. Weather Bureau says.

*Meteorology*

*Science News-Letter, January 25, 1930*

## Light Control

A flashing beam of light, reflected back to a locomotive from a mirror on the signal post, is the latest protection for railways. The new device is being tried out over a stretch of several hundred miles of the German State Railways, between Berlin and Munich.

From a small searchlight on the front of the locomotive a narrow beam of light is thrown upwards all the time the locomotive is in operation. A ring of light sensitive cells are located around the searchlight lens. When the train comes to a signal post, the mirror on the post reflects the light back to one of the cells. This starts an electric current, which makes a visible signal in the engine cab, and remains until the engineer acts on it, or, if he does not respond promptly, the train is stopped automatically. Movement of

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the mirror on the post determines which cell receives the reflected light, and the signal given the engineer.

In order that the wrong signal will not be given by some stray light beam, the light of the searchlight is interrupted 600 times a second by a rotating shutter, and the cells are adjusted to respond only to light of this frequency.

The great advantage claimed for this system over previous methods of automatic train control is the simplicity of the apparatus on the track. Previous electrical methods have required an elaborate system of wires and machinery on the track, which were troublesome and expensive to keep in order. In the new method all the complicated apparatus is right on the locomotive where it can be adjusted and repaired in the round house.

*Physics—Engineering*  
*Science News-Letter, January 25, 1930*

### Mechanical Congress

The fundamental principles underlying propulsion, airplane flight, plasticity, strength of materials, and acoustics will be considered by scientists and technologists from all parts of the world when the Third International Congress for Applied Mechanics meets at Stockholm August 24 to 29. The leading Swedish scientific institutions, including the Royal Technical University, will be hosts to the visiting delegates.

*Mechanics*  
*Science News-Letter, January 25, 1930*

### Exit Floorwalker

The kind of a person who makes the most satisfactory store floor walker, or, as the position is now more impressively called "section manager," has been investigated by Dr. C. J. Ho, New York specialist in industrial psychology.

The section manager who has succeeded the old-fashioned floor walker has become so important a person that one department store in New York gets out a 70-page manual for the guidance of its section managers in their duties. These employees not only have to deal with customers in adjusting complaints and exchanges of goods, but must also be responsible for the discipline of salesclerks.

After analyzing the personalities and records of more than 100 section

managers in a single New York department store, Dr. Ho has concluded that an individual who makes good in this important position must be lively, aggressive, responsive, alert, and pleasant.

"Married men from 30 to 45 years of age and single women from 25 to 35 have the best chance for success in the section manager job," Dr. Ho stated in reporting his investigation in the forthcoming issue of the *Personnel Journal*. "Men should have at least two years of college education, and intelligence a little above the average. Women with high-school education and average intelligence may succeed if they have other good qualities."

Both men and women should be free from any personality difficulties of their own, which would make them nervous and irritable, Dr. Ho emphasizes. They will also need a convincing manner, initiative, good appearance, and an attitude of interest for success.

*Employment Psychology*  
*Science News-Letter, January 25, 1930*

### Memorial

An engineering memorial to George Washington, the engineer, which would include the restoration of canal locks at Great Falls on the Potomac; is being sought by the American Engineering Council.

It is proposed to complete the reconstruction by 1932 when the George Washington bi-centennial will be held.

Washington's canal at Great Falls, a few miles west of Washington, is remarkable when the crude machinery he had to work with is considered. The canal on the Virginia side of the river is cut through rock for a distance of 40 feet at the lower end. As first laid out it consisted of five locks which took care of a 76-foot fall.

*Engineering—History*  
*Science News-Letter, January 25, 1930*

### New Value

A new value for the "charge of the electron," one of the most fundamental of physical quantities, has just been announced by Prof. A. S. Eddington in *Nature*. About a year ago Prof. Eddington, who is Plumian professor of astronomy at Cambridge University, announced calculations made from theoretical considerations, showing the value to be 136. He now announces that his further study has shown the theoretical value to be 137. This brings it more nearly in accord with the classical experimental determination of the value by Dr. R. A. Millikan, American physicist and Nobel prizeman, who found it to be 137.1.

*Physics*  
*Science News-Letter, January 25, 1930*

### Custer Veterans

Indian survivors of Custer's battle on the Little Big Horn have been found among a band of Wapeton Sioux in central Saskatchewan by an expedition from the Cambridge University Museum and the British Museum.

The expedition, led by an American, Donald A. Cadzow, has just returned to civilization after traveling thousands of miles to study scattered tribes of Canadian Indians whose old native culture is fast vanishing. Mr. Cadzow has been accompanied by Robert Rymill of England and John Rymill of South Australia.

The band containing the Custer fight survivors moved to Canada shortly after the battle, Mr. Cadzow said. The group fought its way northward to good hunting country on the north shore of the Saskatchewan river and there it settled. The old chief, Four Stars, is still alive, and they all call Americans "Che-moki-men" or "Long-knives," after the name long ago given to American cavalry men who carried sabers.

In northeast Saskatchewan the expedition found an untamed tribe of Salteaux Indians, led by a blind old chief named Nippy, and independently hating everything that suggests the white man's America.

"These Indians live as their ancestors did a hundred years ago, hunting moose, deer, and fish," Mr. Cadzow said. "Repeated efforts by the government to keep these long-haired pagans on a reservation have failed. They refuse to accept treaty money offered to them each year by the Indian Department, and missionaries sent to them by various faiths have given up all hope of converting them because it is impossible to work with a roving band of hunters who refuse even to talk with a white man."

Many of the ancient secret societies still function among the tribes, the expedition found. The Piegan Indians of Alberta hold their annual Sun-Dance, but the torture of warriors by placing sharpened sticks through the flesh of their breasts is omitted, because it is no longer necessary to make warriors.

"The weird throb of the tom-tom played by medicine men and herb doctors can still be heard on the reserves," Mr. Cadzow stated. "But it is only a matter of a few years before the white man's civilization will wipe out the last vestige of true Indian culture."

*Anthropology*  
*Science News-Letter, January 25, 1930*