

Drs. Bowden and Snow believe that they have obtained vitamin A by the action of ultraviolet light on carotene, but, according to Prof. Heilbron and Dr. Morton, this could only yield hydrocarbons, that is, substances made up of hydrogen and carbon only. It could not give vitamin A which contains in addition oxygen in the form of an "alcohol group" (OH).

Another test on the power of absorption of light of wavelength 3280 Angstrom units, is not considered conclusive evidence, because iso-carotene, a colored substance readily obtained from carotene, has a sharp absorption band in the neighborhood of 3200 Angstrom units and similar substances other than vitamin A may be responsible for the absorption observed.

*Science News Letter, June 25, 1932*

## RADIO

## Voices Beautified For Radio By Ingenious Mechanisms

### Compensators and Filters Make It Possible for Same Voice to Speak in Different Accents at Operator's Will

**A**CCUSTOMED as the public is to retouched photographs that flatter, lightning hair color changes for lovely ladies, "ghosted" books and magazine articles, there is a sense of shock in the idea that radio voices of political speakers can be beautified.

Granted that they need it, the speculation is what effect this possibility may have on coming political events. A former Federal radio commissioner, now editor of *Electronics*, Orestes H. Caldwell, recently let the public in on secrets of radio's voice beauty parlors.

Plug in the proper combination of electrical gadgets in connection with the microphone, says Mr. Caldwell, and almost any political speaker's voice may be given charm and persuasiveness.

Sounds over the radio can be changed by placing into the broadcasting circuits devices that vary, permanently or at the discretion of the radio control engineer, the frequency and volume. The electrical devices, compensators and filters, have been in common use in connection with commercial radio programs and in the making of talking motion pictures. Whether they have been used as yet to build up the vocal personality of any of our prominent public men is a matter of conjecture. It is certain that the radio, even when not doctored, does change the speaking voice.

Radio and other electrically transmitted sound devices are much kinder to high-voiced individuals than they are to deep-voiced "he-men" speakers. They have placed on pinnacles of momentary fame singers and announcers who must carry with them amplifying devices in

order to be heard by audiences of their "personal appearances."

There is even the possibility of appeal to sectional feeling for Mr. Caldwell suggests that appropriate compensators placed in branches of broadcasting networks would make the political candidate speak simultaneously with a shrill Yankee twang in New England, a Southern drawl in Dixie, and a breezy western accent in the West.

*Science News Letter, June 25, 1932*

## ENGINEERING-ECONOMICS

## Selling Gas by the Pound Allays Suspicions of Public

**DO YOU** pay for your domestic gas by the cubic foot, by the pound, or by the "therm"? It depends on the kind of gas you get—old-fashioned or modern.

Recent developments have brought out new styles in city gas. Two new gases, propane and butane, have become cheaply available from gasoline refineries. The new fuels, produced in large quantities, are a god-send to gas companies serving scattered districts. Unfortunately they are a source of worry to the accounting department. The public, accustomed to old-fashioned artificial gas at sixty or eighty cents a thousand feet, doesn't understand that it is fair to pay a much higher price per cubic foot for the new fuel.

## ENGINEERING

## Artificial Lightning Flashed At Ten Million Volts

See Front Cover

**T**HE MOST powerful man-made lightning is flashing across the cover of this week's SCIENCE NEWS LETTER from new equipment in the Pittsfield laboratories of the General Electric Co., which has twice the capacity of any preceding apparatus of its kind.

This is a discharge through a 15-foot space of 50,000 amperes at 10,000,000 volts. The voltage is capable of projecting an arc a distance of 60 feet. F. W. Peek, Jr., was in charge of the development of the new equipment.

Just what can be done with the ten-million-volt discharge nobody knows yet. It is to be used in connection with research on natural lightning, the effects of which it can approximate more closely than has hitherto been possible. Whether or not this high voltage will produce cosmic rays or split the atom, as scientists have predicted, Mr. Peek said that only time will tell.

Yet powerful as the new apparatus is, its discharge represents real lightning in only a fractional way. The voltage of a natural lightning discharge, Mr. Peek stated, is one hundred million, or ten times that of his best artificial "thunderbolt."

*Science News Letter, June 25, 1932*

Heretofore a gas company has been compelled to build a costly gas manufacturing plant, or a long and expensive pipe line to serve a town far removed from the metropolis. Propane and butane, on the other hand, can be liquefied and shipped economically by rail to a distant small town. One cubic foot of propane will yield as much as three hundred cubic feet of excellent fuel gas upon evaporation. These new gases are extremely rich, running from 2,500 to 3,200 on the heat unit scale in contrast with the 600 units from common city gas. Such fuel is obviously worth two or three dollars per thousand cubic feet.

Unfortunately the gas company, like the plumber and the tax collector, is a conventional object of public distrust.



#### AURORA IN A BOTTLE

*Dr. Alexandre Dauvillier, Parisian scientist, is producing synthetic "polar light" in this large glass bulb. The earth is represented by the small sphere inside and the artificial aurora is playing around it. Dr. Dauvillier will spend next winter in the Arctic to check his theory.*

Hence, if the gas company decides to junk the old town gas plant and sell butane at three dollars a thousand, long and loud is the wail of protest to the utility commission.

California gas authorities, anxious to escape this unpopularity, in some cases are selling the new rich gas by the pound. The uninitiated do not understand whether the price is high or low, and have to be contented with the realization that the money figures on their bills are the same as ever. One company mixes its high-powered fuel with five volumes of air before delivery. This air is insufficient to make the gas explosive but brings its cubic-foot price down to a point which pleases the customer.

Best of all is the new custom of selling gas by the "therm." This new unit of measure, like the kilowatt-hour of the electric utilities, deals neither with meaningless volume nor weight, but with real heat value—the thing we pay for. One therm is enough gas to heat about 600 pounds of water to the boiling point. In certain eastern cities, where future gas prospects are uncertain, a consumer knows exactly what he is getting by paying a fixed price per therm.

*Science News Letter, June 25, 1932*

PHYSICS

# Slow Electrons Make Possible "Polar Light" in Laboratory

## French Scientist Who Duplicated Aurora Will Spend Winter in Arctic Continuing Study of the Original Light

By DR. VICTOR COFMAN

**V**ERY SLOW electrons bent by the action of a magnetized sphere produce "laboratory auroras" in an apparatus devised by Dr. Alexandre Dauvillier, professor at the Ecole Supérieure d'Electricité of Paris. Dr. Dauvillier is a member of the French "polar year" expedition, and will spend the coming winter at Scoresby Sound, on the Greenland coast, to obtain final proof of the continuity of the aurora lights right around the polar regions. To this end he will cooperate with the polar expeditions sent by other nations who take part in the "polar year" program.

The apparatus in which the aurora can be observed consists of a hollow sphere of aluminum, representing the earth; within it there is a slightly smaller iron sphere, also hollow and partly surrounded by conducting wire, so that it can be magnetized to give a magnetic field similar to that of the earth. The whole apparatus is enclosed in a large glass bulb the air pressure in which is reduced to one millionth of an atmosphere to correspond to the conditions in the upper atmosphere, where the aurora takes place. The sphere can be rotated around its axis, or the axis rotated, showing the daily and annual variations.

#### Ring Around "Polar Regions"

The stream of slow electrons of 200 volts energy obtained from a hot cathode introduced into the glass bulb, is there deflected by the magnetized sphere. The electrons strike the molecules of the rarefied air and liberate secondary electrons that cause luminous effects, resembling the aurora light. They form a ring right around the "polar regions," corresponding to the rings partially observed by Nordenskjöld in 1878, during the expedition of the "Vega."

On a cosmic scale, the electrons needed to produce the auroras have their origin indirectly in the sun. The sun sends out enormous numbers of electrons. These "primary" electrons are deflected by the earth's magnetism and sur-

round the earth at a great height. Some of them strike the upper atmosphere and yield secondary electrons that give the multi-colored luminescence of the auroras, so greatly admired by visitors to polar regions.

The different auroral arcs observed by Nordenskjöld represent, according to Dr. Dauvillier, the "lines" of the earth magnetic spectrum of solar electrons. From the curvature of these arcs one may calculate the velocity, and therefore the energy of the electrons. This is found to be very great indeed representing a velocity very nearly that of light itself, which has the highest known velocity of anything in the world, about 186,000 miles per second.

*Science News Letter, June 25, 1932*

ASTRONOMY

## Native Name Shows Meteorites Not Ancient

**"C**HINDU chinna waru chingi yabu," meaning "sun walk fire devil rock" is the name which Australian aborigines give to the meteorite craters at Henbury, Central Australia, according to J. M. Mitchell, prospector. This makes it probable that the remarkable shower of meteorites which produced craters up to 220 yards in diameter may have taken place in such relatively recent times that tradition has preserved this descriptive name. Old blacks are still afraid to camp within a mile of the craters, it is stated.

The earlier opinion expressed when these meteorite craters were first discovered last year, was that their age must be reckoned in terms of thousands of years, because there were traces of several generations of "mulga" trees having grown in the craters, and certain of the meteoric iron fragments were completely disintegrated in spite of the dry climate.

Dr. L. J. Spencer of the British Museum of Natural History recently exhibited a number of these meteorites before the Royal Society of London.

*Science News Letter, June 25, 1932*