



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

VERY 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

"CHINDU 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