

WHAT'S NEW IN SCIENCE

Conducted by Ransome Sutton

*New Giant Electric Robot Serves The Times in Wireless Press Exchange With Other Metropolitan Dailies.
San Marino Engineer-Publisher Says Planets as Well as Sun Cause Cyclones
and Earthquakes as Shown by Study of Cycles.*

A News Giant Born

ALTHOUGH still in swaddling clothes, a legless prodigy—named "Press Wireless"—has already become the nimblest reporter in the world. Like the language used by penny peepers and telegraphers, its words are clicks, but the clicks are understood, translated into every-day English and published before sunrise in five widely separated metropolitan newspapers: New York Times, Christian Science Monitor, Chicago Tribune, San Francisco Chronicle and Los Angeles Times. It is the nearest approach to instantaneous news service ever devised.

Two electrical engineers, Anthony Ostlund and Jack Main, designed and built the apparatus used in Los Angeles, and they have only commenced to show what they can do.

Wired news travels fast. Like the penny express was, however, it is slowed down while passing through intermediate stations. But wireless news jumps straight from sender to receiver—in the twinkling of an eye. Neither storms nor broken wires interfere with it. It can jump in opposite directions simultaneously, for an operator in the office of the Los Angeles Times tells stories to the New York Times while listening to stories from an operator in the latter office. One does not have to wait for an idle wire, for the transmission between points is just as direct and untrammelled as conversation between individuals. If you don't like the story being told you can say: "Cut it out and tell another."

The transmitting apparatus, located in the Southwest Building, is an electrical robot. Unattended, it works automatically, does its duty to a dot and nothing distracts it. It doesn't sneeze, sweat, shirk, make mistakes, complain of hard work without pay, or get tired, but it wants its watts and without them it will not utter a single click. The character of its performance apparently depends upon the voltage. "We began with 75 watts," Mr. Main told me, and he went on to explain:

"The transmitter functions as a giant amplifier, beginning of course with a very weak signal produced by about one watt. This weak signal is amplified by means of larger and larger tubes to 75 watts, 100 watts, 1000 watts and on up to 10,000 watts, with a corresponding increase of pressure from about 180 volts up to 10,000 volts."

The largest tubes are expensive, costing about \$750 each, but the cost of power consumed is only about \$10 a month.

This automatic transmitter of news is controlled by a switch on the desk of an operator in the office of the Los Angeles Times. When the switch is thrown, energy goes through an ordinary telephone wire from the Times Building to the Southwest Building and to regular sequences closes a series of circuits, thus energizing the robot for better. Type-written messages are then clicked off to it at a rate up to 100 words a minute; but, instead of spelling out words, the typewriter punches holes in a strip of paper tape, which passes through an electric device that translates the holes into continental Morse code characters, then these characters—dots and dashes—are automatically flashed by the robot to the desired destination. As more sensitive relays are devised, it will be quite possible, according to Mr. Main, to send 300 words a minute.

Although a very short long-distance talker, the robot is as good as a steed. The "ears" of this press wireless system, including all the receiving apparatus, are located on Mt. Pennington six and one-half miles from the Times Building. Here signals are received through an amplifier of particular "sound frequencies," or musical notes. All extraneous sounds are filtered out, the filters being especially sensitive to just one tone.



Left, Jack Main and one of the giant tubes. Above, Anthony Gerhard.

Since different filters respond to different tones, from deep bass to high tenor, each being dead to all tones but its own, a selection of filters is equivalent to a selection of news, and by using two or more filters, two or more stories can be received simultaneously.

"If you ask the technical staff of any powerful broadcasting station, such as KIM," said Mr. Main, "to establish communication with Chicago at 4 p. m., you would be thought off balance, but we are doing that daily. Why the difference? Because they use a long wave length, we a short one. In a short wave station, one feels remote from regular radio connections, as if in another world. Unconscionable things happen—fadings, skip distance and beam effects. At our receiving station, there are no announcements, no lateness—just the hum of incoming electric impulses, which a hollow needle filed with ink prints in code characters on a tape. A little motor pulls the tape across a standard typewriter and the operator transcribes the characters."

From 3 p. m. until 9 p. m. every day representative of five metropolitan newspapers are thus in conventional touch, sliding as if were around the same table. Hence whatever transpires in Boston, New York, Chicago, San Francisco or Los Angeles becomes available for publication in all five cities almost simultaneously.

Cyclones and Earthquakes

THAT which in the air and quakes in the earth's crust result from magnetic forces exerted not only by the sun but also by planets, is a theory which P. Gillette, engineer and magazine publisher, stands ready to substantiate by means of an amazing array of organic facts. His beautiful home on Oak Grove avenue, San Marino, is his laboratory where he does the same kind of original work that is being done in the laboratories of Mt. Wilson observatory. Some of Mr. Gillette's findings sound a bit bizarre, but he applies to his work methods which are scientific, and his conclusions will impress scientists.

"Cyclonic storms and earthquakes come in cycles," he told me. "During the last few years, I have devoted nearly all of my time to a search for the cause, and I am now certain that each of the larger planets is responsible for at least three cycles: (1) a primary cycle due to an upper magnetic field somewhat like the field produced in the Heavlyside shell of electrons which sur-

rounds the earth at a higher altitude; (2) a secondary cycle due to a lower magnetic field analogous to the earth's lower field; (3) a supercycle due to the periodic coincidences of the maxima of (1) and (2). In addition, most of the planets cause (4) a subcycle of one-sixth, one-twelfth or one-eighth the length of the primary cycle, due to permanent whirls in the upper electron shell."

All four cycles, produced by any particular planet, are harmonic, Mr. Gillette says, the primary cycle being, in every case, somewhat shorter in length, but much greater in its terrestrial effects, than the secondary cycle. He thinks the difference is due to a slow clockwise rotation of the upper pole of the planets, which advances the "pointing" of the north magnetic pole in an eastward direction during each revolution, thus shortening the cycle. Since magnetic lines of force, proceeding from a planet, hit the earth periodically, storms and earthquakes are also produced periodically, or in cycles. Briefly that is the theory.

Day by day Mr. Gillette has followed the planets in their paths and simultaneously recorded weather and earthquake conditions upon the earth. He has huge files of figures for each of the major planets, and a larger file of sun spot figures. As shown by statistics, the sun's magnetic effects produce annually, during October, in the Being Sea region almost continuous rainfall and very frequent quakings in the crust. That region is one of many birthplaces of external and internal storms.

The evidence in favor of the theory is twofold; statistical and botanical. Botanical evidence is found in the rings of Sequoia trees. During periods of copious rainfall the rings are thicker than the thin rings formed during periods of drought, and Mr. Gillette has made diagrams of the rings formed during the last 3500 years. These cyclograms certainly show recurring periods, or cycles, of growth, and the periods of greatest growth coincide with periods when the magnetic pole of certain planets, working in harmony with the sun and its spots, pointed toward the earth.

Studying his data, Mr. Gillette thinks he has found what cycles are produced by particular planets. He has also found cycles not produced by any of the known planets, from which he infers that other planets exist which have not yet been discovered. His curves called for a ninth planet, and the discovery of Pluto filled the requirements. Similar curves and

figures likewise call for a tenth planet, whose period and magnetic behavior he has already computed.

"The Crag oil-drop experiment," Mr. Gillette remarked, "described on The Times science page January 23, is a physical demonstration of the way cyclonic storms are generated both in air and motion matter."

The theory goes into geology as well as into meteorology and meteorology. He contends that motion swirls, emanating from various centers like cyclonic storms in air, caused the curved configurations of land during the land-forming ages, and on a globe he has indicated the motion places centers around which the land finally hardened.

If earthquakes as well as cyclonic storms actually occur in cycles, one should be able to check up on their occurrence in the past. Mr. Gillette has done that by means of statistics and the records of the rings in Sequoia trees. With equal assurance, one should be able to forecast earthquake periods, and that he has done also.

"There will be a great magnetic 32.5-year cycle in 1936," he predicts, "and another in 1942, due to a 31.5-year cycle, with exceptionally heavy rainfall, severe earthquakes and violent volcanic eruptions."

Whatever we may think of this theory, no one who passes through Mr. Gillette's records will say it is unscientific. Facts are always impressive and he has marshaled a great array of facts.

Anthropology Lags Behind

WE KNOW infinitely more about the earth and the sun and their forces—about physics and chemistry—than about the science of mankind. There are in the whole world today only two definitive and exclusive laboratories of anthropology.

These are James A. B. Scherer's works. As director of the Southwest Museum, he has undertaken to interest human beings in themselves. Both laboratories referred to have been made possible by John D. Rockefeller, Jr.—one to study the peoples that developed round the land bridge linking Eurasia and Africa, the other to study the people that developed near the Panama land bridge and spread over the Americas.

A New Hospital System

THIS whole present hospital system is wrong and shockingly expensive," Mr. James Barrett, Australia's most distinguished doctor, told the British Medical Association at its recent meeting in Winnipeg. He proceeded to explain the new system, "which takes advantage of people before they get ill. It differs from any other hospital plan I know of. We might call it a co-operative insurance scheme, providing for the inevitable visit to the hospital that comes to us all."

Subscribers pay an annual assessment of eight dollars and receive, for an additional charge of ten dollars a week when sick, first-class hospital accommodations, nursing and food. What an opportunity for philanthropy to start such a system in this country!

Questions

Submitted by Frances Bevan

1. How far do forces leap out from the sun?
2. What is cause and where is it produced?
3. What is thalium in a therapeutic sense?
4. What is an idiosyncrasy?
5. Besides being a flowering plant, what is the calendula used for?
6. What is the bitter ingredient in orange-peel colody?
7. What is an aura?
8. What is a microcosmograph?
9. What is the Burgess Sea?
10. What is phthisis?

Answers on Page Eighteen.