

## IN THE FIELD OF ELECTRICITY

Some Progress Made in Pushing Wireless Telegraphy to a Practical Finish.

## SUMMARY OF RECENT DEVELOPMENTS

Novel Features of a Farmers' Telephone System—Electric Water Heater—News Hot from the Wires.

A new system of wireless telegraphy, said to overcome many of the points of difficulty in the present system, has been invented by three Chicago students of electricity. The problems of increased speed in transmission, and, most important of all, the operating of several instruments in the same territory, are said by the inventors to be practically solved. The three collaborators in perfecting the new system are Prof. Clarence E. Freeman of Armour Institute, Dr. L. De Forest, lately of Harvard, and Edwin H. Smythe of the Western Electric company. Secret tests have been carried on since early in the summer, and the results have been so satisfactory that a public exhibition will be given. The most satisfactory test was given some days ago from the top of the Lakota hotel to the Armour Institute. The test, the inventors say, was given under the most trying conditions, with a broken field along the route of transmission and a metal roof directly under the upright at the sending station. Although the distance was only seven blocks, there was much more than ten words a minute, the messages came sharp and clear into the receiving station. The inventors declare that their system gains over the Marconi method at both sending and receiving stations. The sender, which is worked out from the theory evolved by Prof. Freeman, makes no use of the induction coil, which has heretofore been considered an indispensable part of the system. In its place is a condenser which, besides being less bulky than the sending cabinet with induction coil, liberates energy with greater speed. The advantage of the condenser over the coil was given a test in the message sent from the Lakota hotel to the Armour Institute, and, it is stated, the condenser made a better record. The receiver aims to receive signals from the sending station as fast as the operator can work the key. Heretofore fifteen or twenty words a minute has been the best speed attainable by wireless telegraphy, and the inventors say practical results are being made more than ten words a minute on an average. In former inventions the tube of metal filings which was affected by the electric waves and recorded the signal had to be tapped mechanically to place the apparatus in readiness to receive another signal. The inventors say that electricity now does the work that the mechanical blow once accomplished, and that thereby much time is saved. "There really is no reason why several stations could not be operated in the same territory with our invention," said Prof. Freeman. "The receiver acts instantaneously and can take signals at any speed. In this way different senders can get their messages at different rates of speed and messages can be properly distinguished."

**Feasenden's Experiments.**  
Prof. Feasenden of the national weather bureau contributes to a recent number of the Electrical World and Engineer a short paper on wireless telegraphy. This is drawn out by an address recently made in which Marconi described a number of improvements on his earlier work. Prof. Feasenden, a considerable portion of the American expert's article is devoted to showing wherein he has paralleled the young Italian's methods, and wherein he has departed from the same.

For instance, Marconi has of late employed hollow vertical cylinders, instead of an upright wire, because he finds that he can produce a more prolonged wave development from each spark. Prof. Feasenden has used cylinders, too, but does not arrange them one inside the other. Again, Marconi tunes his transmitter and receiver so that they are both sensitive to Hertz waves of the same frequency, and he does so by introducing devices known to the electrician as the "inductance coil" and "condenser." The objects of this procedure are to prevent the receiver from taking more than one message, no matter how many transmitters are at work near it, and to insure secrecy. Prof. Feasenden has employed the same means for the same purposes, but in a somewhat different manner, while Marconi makes the length of wire in the "secondary" part of one of his coils equal to the height of his radiating cylinder, Feasenden doubles the ratio. He has also tried several new forms of "radiator."

But two other advances have been made at Washington, compared with which the other innovations are insignificant. Prof. Feasenden has recently simplified the mechanism for sending messages, and at the same time enhanced its efficiency. He says that while dispensing with induction coils and cylinders he has produced radiation sixteen times as great as that obtained from a Marconi instrument having a one-inch spark gap. He has thus sent messages for a distance of fifty miles without using more than a part of his available energy. He was successful in finding two other ways of accomplishing the same object. For reasons that seem good to him Prof. Feasenden refrains from telling how big a distance he has actually covered, or hopes to cover. But here is already a promise of exceeding Marconi's maximum of 200 miles.

The other radical improvement to which the Washington expert briefly refers is his system of tuning, in order to secure secrecy. The statement is made that Marconi's latest plan has been tried and found open to objection. Only within certain limits can interference be thus avoided. Prof. Feasenden describes a device by means of which one could break up communication by Marconi's tuned transmitter and receiver. "Consequently," adds the Yankee investigator, "this method has been superseded by several others which permit of selective signaling, no matter how strong the interfering radiator may be nor how close it may be, even approaching the interfering radiator within a few feet, producing absolutely no effect."

## Novel Telephone System.

A novel telephone system, invented by an electrician in the little town of Yorktown, Assiniboia, N. W. T., may effect a revolution in the methods of existing systems, particularly in the lines of communication between farmers in the great prairie of the west and at great distances apart. The inventor two years ago established at Yorktown a telephone line upon what was then an entirely new system, into which he introduced several original and economic features. This system gave such universal satisfaction that he, as a further experiment, completed last winter a trunk line of thirty miles in length to the north of the town and supplied the farmers of that district with communication with Yorktown and with each other. It is the first farmers' line in Canada. A joint stock company is now being formed to extend this system, which, in some respects, is similar to the mutual systems in vogue in some parts of the United States.

A few of the novelties of the system are: A battery situated at "central," working an open circuit, rings both subscriber and central alike. The subscriber simply lifts his

## TROUBLE AT THE POLE.



A polar bear by the Arctic sea. Sat fishing on a cold day. When there's a fish on the line And stole his catch away.



The bear then grabbed the weeping Eskimo and bore him hence. And swore that Eskimos should not Eat fish at his expense.



He stood him up so that the sun Could shine right through his skin. His shadow on the ground disclosed The fish curled up within.



His fish regained, Old Bruin is Unstated in his pride, Unto the great discoverer of The wondrous solar rays.

telephone and is at once in connection with "central," or, if the central operator has not the telephone at his ear, then an indicator is actuated. One indicator only is required for each section of, say, 100 subscribers, and yet no difficulty or confusion is occasioned thereby. The system is metallic, and yet only single plugs and cords are required to give connection; no ringing or listening keys are required; no instruments, other than the subscribers' sets, are in circuit, consequently speaking is loud and clear. Subscribers are constantly in connection with "central," who, however, does not overhear conversation. Only three simple actions are required to give connection. There are other advantages attached to the system.

## An Electric Water Heater.

Among the patents recently issued is one for an electric water heater, which is simple in construction and which is decidedly interesting as a novelty, although practical electricians are inclined to doubt its practical utility. Its description is as follows: The device is arranged in a water pipe and in juxtaposition to a faucet. In form the heater is compact, being made with an enclosing shell, which has inlet and discharge pipes directly connected to the opposite ends of the shell. Concentric electrodes, preferably made of carbon pressed into shape, are arranged within the shell and connected with an outside source of current. One electrode is made in the form of a hollow cylinder and the other one is in the form of a core, fitting within the cylinder, but providing a space between its periphery and the inner wall of the cylinder for the passage of the water to be heated. The core electrode is provided with a central bore opening at the bottom, but closed at the top, and the inlet pipe terminates short of the top, whereby the water discharged from the pipe will pass inwardly inside the core and between the two electrodes to the faucet. The periphery of the core electrode is formed with spiral grooves in the shape of screw threads, the faces of the grooves being covered by some suitable fabric which is pressed into shape when the core is being formed. The object of fitting the core or electrode with fabric is to prevent the disintegrated carbon from passing out through the faucet with the running water. The cylinder electrode is formed with spiral grooves on its inner face, producing substantially a female thread, which, with the male thread on the core, forms a zigzag path for the water. By the manipulation of the handle of the faucet in one direction an electrical current is sent through the heater, so that hot water may be obtained, according to the inventor's assertion, while turning the handle in the opposite direction will result in cold water issuing from the faucet. One advantage mentioned in the patent specification is that "an electric current, say, of 110 volts, will destroy all animal and vegetable matter in water to a large extent. The zigzag path which the water being treated is compelled to travel is advantageous in that it tends to precipitate any foreign matter in the grooves of either the core or encircling electrode. The precipitation is due to the formation of eddies in the base of the grooves, which eddies retain the precipitated matter and prevent its escape through the faucet."

## News Hot from the Wires.

Buda-Pesth has the most singular newspaper in the world. It is called the Telefon-Híradó, or Telephone News. For eight years this venture has been in working order and it is a great financial success. There are 6,200 subscribers, who at regular stated intervals receive the news of the day "hot" from all over the world while sitting comfortably at home. The subscribers take up at a certain time of day their telephone receivers and listen to the news which is spoken to them all simultaneously by a "teller" in the newspaper office. Advertisements are heard in the same way. You can skip the advertisements in the telephone newspaper, for they are artfully sandwiched by the teller between exciting pieces of news and you are bound to listen for fear of missing anything.

One editor, four assistant editors, nine reporters and a number of "tellers" compose the staff of the paper. News is collected in the usual way and is written out by the reporters, passed by the assistant editors and finally initiated by the editor. Then it is handed to the "teller," who speaks it over the wires.

The telephone newspaper does not escape libel actions. It has had four and won them all.

There are two Sunday "issues," as well as many "editions" during the secular days of the week.

Aggrieved subscribers dissatisfied with the editorial policy of the paper sometimes wish to stop their connection with it, but this is not done easily. In the first place instruments have been installed in the house and security given for a year's sub-

scription and some time must elapse before the receivers can be removed. The subscriber may decline to listen to the news, but the maddening bell will nevertheless continue to ring him up at the customary intervals.

The penny-in-the-slot system is being tried in connection with the newspaper, so that soon any one in Buda-Pesth will be able to have "pennorths" of news doled out to them.

This novel and interesting enterprise was started about eight years ago by Theodore Buschgasch, who had been interested in electricity and had patented some inventions. Buschgasch died in 1893 and the present efficiency of the paper in all that pertains to its technique is largely due to Emil von Savetjes, who is known on the continent as a technical director. The concern is owned by a stock company with a capital of about \$250,000.

At first some difficulty was experienced in hearing the news clearly over the telephone—a difficulty which telephone subscribers in other countries experience in ordinary conversations—but a simple invention soon disposed of this obstacle.

## FIVE MOUNTAIN STORMS.

All Raging at Once in Sight of Virginia City.

"Virginia City," said a man from Nevada to a Washington Star reporter, "is pretty well up in the world, as any one knows who has ever been there, and there are very few localities in all the Rocky mountain region from which a wider range of country can be taken in at one view. Owing to that fact some very beautiful, striking and unusual sights are frequently seen by the dwellers in that famed city, almost within sounding distance of the clouds. I have witnessed some of them myself and I have in particular I remember. In fact, it was a sight that no one having seen could ever forget. It was a moving panorama, grand, impressive in the extreme, being no less than five distinct snow storms raging among the mountains and deserts to the eastward, while in the city a lake of snow was falling. The storms represented all degrees of fierceness and covered an area of at least 100 miles. The one furthest to the east and at the same time the most northerly one, was apparently passing directly over the forty-mile desert. It was black and blinding, and the wind was the whirling fury of snow, and was, perhaps, ten miles in diameter. Any one in the midst of it would have been willing to swear that a snow storm must be raging over the entire continent, but just to the north of it several tall, stately peaks rose out of the forest storm and towered above it in the full splendor of sunlight. The high hills that lay beyond the storm were shut off from sight as though by a gigantic black curtain.

"Nearer, and to the southward, another storm, not so black and fierce as the first, but still dense enough to hide all the region behind it, was in less active progress. It swept along toward the east, reaching from the level of the Carson valley upward to the very cloud where it came, high in the heavens. Still nearer and between the city and the mountains of Como a lighter storm, yet one only two or three miles in width, passed on its way. Through this the mountain peaks could be seen dimly as in a thin fog. A mile further south a fourth snow storm, smaller in area than even the last one, but as black and tempestuous as the great blizzard that, with the sun touching its crown, was sweeping the forty-mile desert, raged in awful fury. All behind it was hid as with the pall of blackest night. Miles away, further up to the southward, the fifth storm, a vast and violent one, was sweeping along, covering and hiding a range of thirty miles of high hills.

"Between these several storm bodies hills, plains, mountains, peaks stood revealed as far as the eye could see, all lying in the glow of a late October sunset. The gleaming peaks that rise golden far above the black masses of storm as they raged in fury at the mountain bases and far up the rocky sides made a particularly striking and awesome part of that strange picture."

## To Save Her Child.

From frightful torture Mrs. Annie Gallagher of La Grange, Ga., applied Bucklen's Arnica Salve to great sores on her head and face and writes its quick cure exceeded all her hopes. It works wonders in sores, bruises, skin eruptions, cuts, burns, sores and piles. 25¢. Cure guaranteed by Kuhn & Co., druggist.

## David Nation Sues for Divorce.

MEDICINE LODGE, Kan., Aug. 9.—David Nation, through his attorney, today brought suit for a divorce from his wife, Mrs. Carrie Nation, who is now visiting in Iberia, O., alleging that his wife held him up to public ridicule, neglected her family duties and abandoned his home.

## WHAT CROPS TO PLANT NOW

Prof. Cottrell Gives Some Good Advice Regarding Present Conditions.

## FEED GREEN FORAGE NOW AND SAVE HAY

It Will Pay Stockmen Better, as the Green Stuff Will Deteriorate, While Hay Will Be Just as Good Six Months Hence.

"The first thing to do in arranging to get stock through the coming fall and winter is to use to the best advantage the crop now growing," says Prof. H. M. Cottrell of the Kansas Agricultural college, in a special article to the Topeka Capital. "The green stalks of corn, sorghum, Kafir corn and other plants used for roughness are worth more for feed now than they will be if fed as dry fodder next winter. If the stockman does not have the necessary pasture and is obliged to feed now, it will pay him to feed his corn and other green crops and save hay for winter.

"A great deal of corn is in tassels and drying up with no prospect for care. Corn in such condition is not worth much, but if it is fed green cattle will get all there is in it, while if it is cut, shocked and left in the field until winter there will be only a pile of poor manure where the shocks have rotted down. It is not necessary to feed the corn now, leave it as long as it stays green, then cut with a binder and when dry stack. Small shocks of immature corn will not keep in the field.

"On the college farm July 15 twenty-six head of cows are being pastured on five acres of sorghum. The sorghum stands waist high, has not headed, and even if we get no rain whatever, promises to supply all the pasture these cows will need for at least a month. We have eight acres of sorghum in another field, and when this heads out we expect to turn the cows on it and from present promises we will have enough feed on these thirteen acres of sorghum to pasture twenty-six cows until October 1. Our tame pastures are bare and furnish no feed whatever, and we have the choice of either feeding hay now and saving the sorghum to be cut for winter or pasturing the sorghum and saving the hay for winter. The hay will be just as good for next winter as it is today. The sorghum fed green is worth much more than it will be if cut and fed dry.

"The college has some high-priced, pure-bred cattle and we are pasturing them now on cow peas and second-growth alfalfa. Both these crops will make good pasture in dry weather. We would not dare to pasture them when damp. If we needed it we would pasture our soy beans and Kafir corn, feeling sure that more can be gotten out of these feeds green than dry. We are pasturing fifteen hogs on half an acre of rape and this will probably give all the pasture they will need until frost, even though no rain should fall.

"Alfalfa that was cut early has made a fair second or third growth and more feed will be obtained by pasturing it than by letting it mature into a short crop of hay. Alfalfa must not be pastured too long.

"Where it is possible to keep the stock of dried-up pastures and put them on sorghum or some other pasture it should be done. If the stock are kept entirely off the grass it will make a slight growth no matter how dry and hot the weather may be and then if we get full rains the pastures kept free from stock will furnish much more feed and feed later in the season than if tramped while dry.

"Sorghum, Kafir corn, cowpeas and alfalfa make safe pasture after cattle become accustomed to them, but great care must be used on starting stock on such pastures. At the college we fill the cattle with grass or hay in the morning and then turn them on the sorghum or other crops only fifteen minutes the first day, the next day thirty minutes and then increase the time fifteen minutes each day until we reach an hour and a half, when it is safe to let them stay on all time and not give them other feed.

"Cattle turned on such pastures at first if hungry will often eat a few mouthfuls and die in a few minutes or hours. The hay that they need when first getting them on feed will be worth much less than the cattle that will probably be killed if hay is not fed.

"We do not know of any crop that, sowed as late as August, will make hay and the effect should be to obtain as much pasture as possible.

"If it does not rain enough to soak the ground to a depth of four inches it will not pay to sow anything for feed, as sowing in dry ground simply wastes seed. It is too late to sow well on cowpeas, but may be sown as late as August 1 with a prospect of a fair crop if weeds do not have early frosts. List shallow and drill in the furrows one-half bushel per acre, sowing the hip-poor-will variety.

"If the season is favorable early Amber sorghum sown in August will produce a bushel per acre, will furnish some pasture if sown as late as August 1.

"Rape sown as late as September 1 will furnish pasture for hogs. Sow Dwarf Essex rape, five pounds per acre, broadcast, or three pounds per acre if drilled. It will do to feed in six weeks after seeding. An acre of rape sown in August will furnish seed costs only 10 to 15 cents per pound the cost is light. If we get a good rain it will pay to sow turnips largely.

"Wheat, oats and rye will furnish a large amount of pasture if the season is favorable, and while these crops are in good condition cattle will do well on cowpeas, but any other feed than straw. A farmer pastured his dairy cows on oats and sold during the fall \$7 worth of milk for each acre of oats pastured, the cows having no other feed.

"It is too early to decide what will be the cheapest combination of feed for winter. Shortage will be in roughness. There is enough straw in Kansas to supply roughness for every animal in that state and with many stockmen straw will be the feed to use. Farmers usually feed from twenty to thirty pounds of hay or fodder a head per day to stock cattle. Very much less may be fed if a proper grain ration is used.

"Bran will take the place of nearly all the roughness and can be mixed with cottonseed, gluten, germ oils or linseed meals, oats or corn, whichever is cheapest and make a good ration at a reasonable cost. Wheat is worth about as much pound for pound as corn and middlings are worth as far as the feed is concerned. Fattening hogs fed all the alfalfa they will eat will fatten on much less grain than without hay. Sorghum hay is good for hogs. A few winters ago some farmers in northwestern Kansas carried their stock hogs through the winter on alfalfa hay alone. A little grain added would have been better.

"The writer began his experience in Kansas in 1875 and has seen years when there was much less feed in the state than this year and cattle were wintered all right. It will not pay to rush good animals on the market, to be sold for half what they are worth. Go slow, it is a good time to sell the culls from the herd, but it will pay to hold the profitable animals.

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