

UNCLE SAM'S LATEST SCIENTIFIC TRIUMPHS

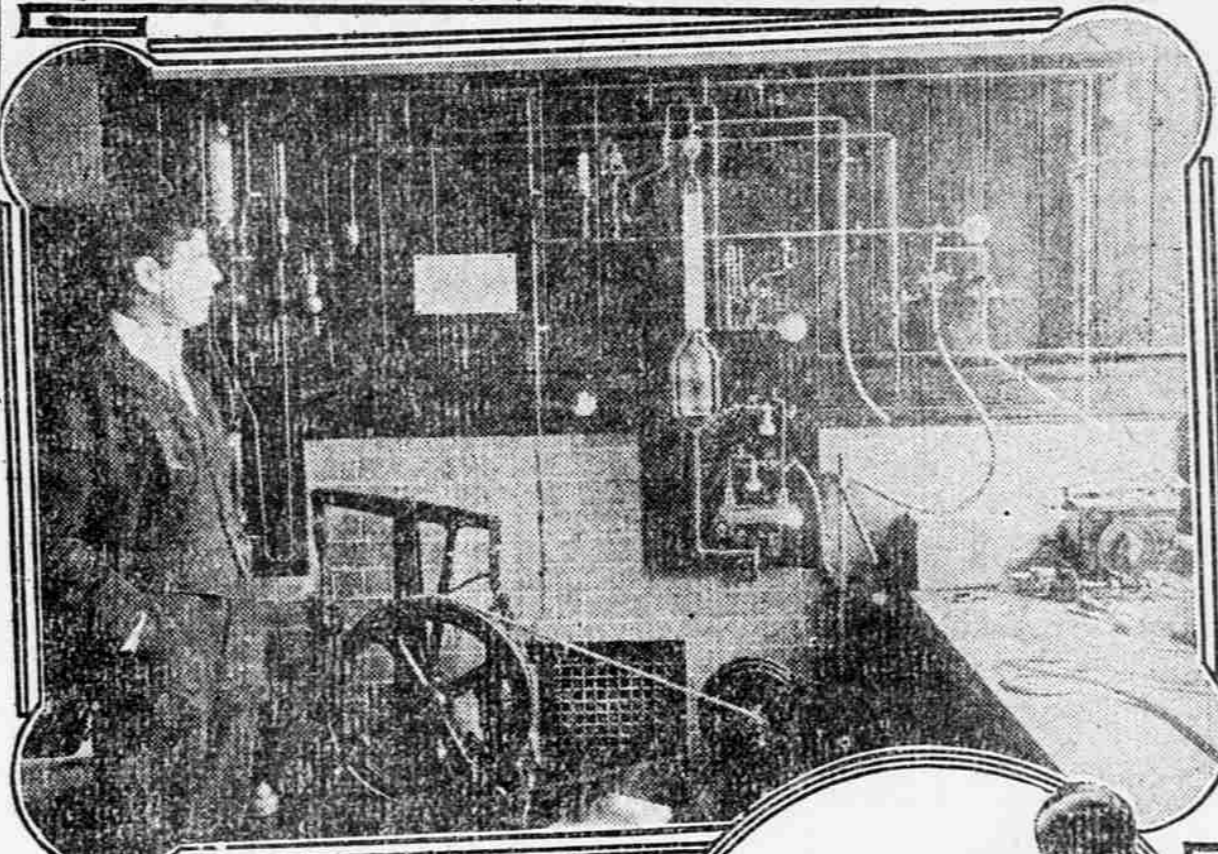


THE PULMOTOR — THE NEW APPARATUS INTRODUCED BY UNCLE SAM FOR RE-STORING LIFE

UNCLE SAM has very good reason to plume himself because of a number of important recent achievements that most distinctly make for progress. Some of these triumphs have taken the form of new inventions for doing things that were virtually impossible of accomplishment heretofore and others, none the less valuable, have been in the line of discoveries of ways and means for doing things that have been done heretofore, but of doing them more easily, more quickly, more economically or more effectively than has heretofore been deemed possible.

The national government has been taking the lead in scientific, mechanical and engineering development to a constantly increasing extent in late years. For, of course, the reader will understand that in speaking of Uncle Sam's current triumphs in the field of invention and experiment, reference is made not to the federal government as represented by its own experts and employees. Now the national government has always been a contributor to the cause of science and invention, there being dual reasons for its activity in such direction. On the one hand the central government, with paternal instinct, has been bound to contribute in every way to the well-being of the whole people and as is well known such benefit is more often than not conferred through the instrumentality of scientific discoveries and inventions. Obviously then it is up to Uncle Sam to foster Yankee ingenuity by every possible means.

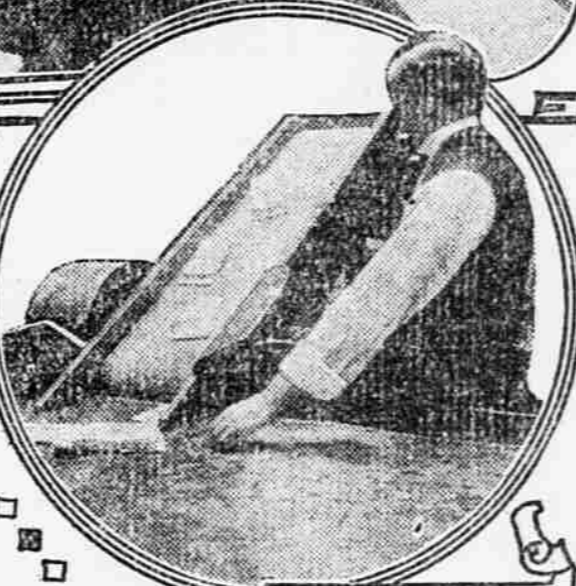
Yet the second incentive to federal activity in this broad field has been even more of a spur than the first. It arises from the fact that the national government is, to an extent



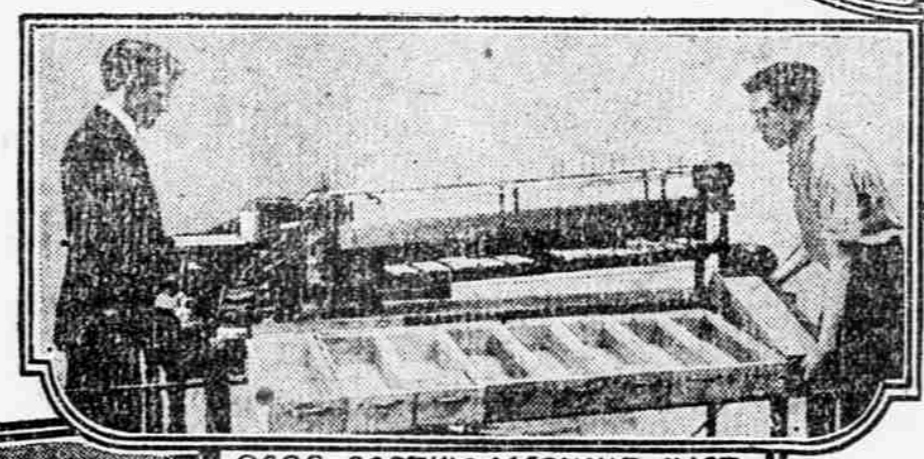
NEWLY INVENTED VACUUM GAUGE AT THE U.S. BUREAU OF STANDARDS

but this does not prevent the magnet from doing stunts of great popular interest now and then.

When the magnet is charged with its full electric current of 125 amperes a piece of metal weighing hundreds of pounds might be suspended at the pole pieces and the leakage, that is the "stray magnetic field" way out at the ends of the magnet is sufficient to support in all sorts of positions wrenches and bars of iron weighing as much as five or six pounds apiece, whereas wire nails in series of half a



"RECEIVING END" OF A NOVEL NEW-STYLE MAIL CONVEYOR



CARD-SORTING MACHINE JUST INVENTED FOR THE U.S. CENSUS

dozen or more, end to end, are supported in horizontal position. One of the most amazing tricks performed by the magnet is to support a glass dish by means of a small piece of iron placed inside the dish, the power of magnetic attraction being exerted upon the iron through the thickness of the layer of glass. Another impressive illustration of the power of this monster magnet is afforded when a handful of nails are thrown in the air perhaps three or four feet away from the magnet. As though whisked in by an invisible hand and almost more quickly than the eye can follow the operation, these nails are one and all drawn to the highly magnetized surface.

This new magnet, a world's record breaker in size as well as in power, was constructed specially for the United States government by a firm of instrument makers in Switzerland. The circumstances connected with the designing of the magnet illustrate how great minds may run in the same direction. Mr. Frederick Bates, the United States government expert who is at the head of the division of polarimetry at the bureau of standards and working in conjunction with other government scientists, just worked out the detailed plans for such a magnet when he discovered that the foreign instrument makers who ultimately built this one for our government had been covering the same ground at the same time, each inventor unconscious of the activities of his rival on the opposite side of the Atlantic.

Perhaps the most unusual attribute of this magnet is that it is made available for continuous use, this being accomplished by replacing ordinary insulated wires such as are commonly used with copper tape. This copper tape is surrounded by insulating oil. Through this oil there are run coils of copper tubing about one-half inch in diameter and through this tubing cold water is circulated to carry off the enormous heat which is developed. In the same room with the new magnet is a yet newer invention—the product of government scientists—which promises great things. It is known as a vacuum gauge and it will enable more minute and more accurate measurement than has heretofore been possible in the case of a vacuum.

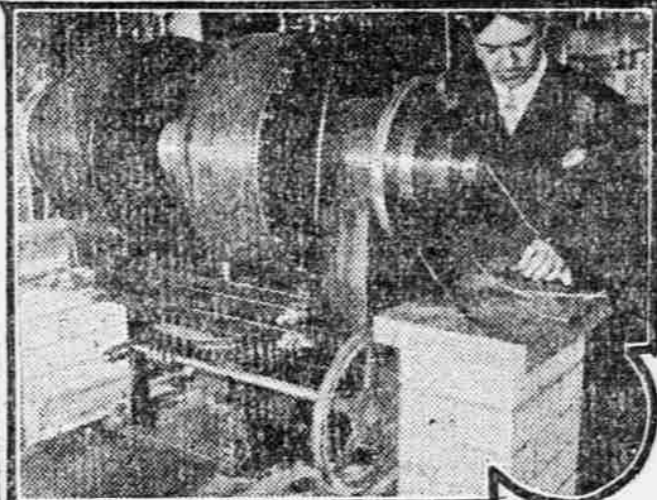
One of the most notable of Uncle Sam's scientific triumphs of the present year is the new system of multiplex telephony mentioned above and which by its disclosure of a method of transmitting a number of telephone messages simultaneously over the same wire is expected to greatly reduce the cost of long distance telephone conversation. In connection with the development of this new form of telephony which will make one wire do the work of ten, Major Squier and his associates have carried on some experiments which, though originally intended only as a means to an end, now promise to have a distinct value of their own in disclosing the possibilities of transmitting music by telephone.

The music of a phonograph or graphophone

was the particular form of melody transmitted and the results were really surprising in many respects. For one thing the music as heard at the other end of the line was remarkably clear and sweet. Indeed it was seemingly more perfect tone production than that obtainable under any other conditions inasmuch as the telephone served to entirely eliminate the "needle nose," the one suggestion of the mechanical which talking machine inventors have never been able to entirely eliminate. It is believed that this disclosure of the possibilities of transmitting music by phone will ultimately enable people to enjoy concerts by the best vocal and instrumental talent when seated in their own homes. This would, of course, prove an especial boon in the case of suburbanites and residents of the rural districts where the use of the telephone has increased so tremendously in recent years. In the experiments with multiplex telephony the graphophone music was employed to still further demonstrate the possibility of using a single wire for the transmission of various messages simultaneously, each independent of the others. For instance, on one occasion Caruso, by means of a "talker," sang on the line while "The Charge of the Light Brigade" (as recited into a separate transmitter close at hand) was carried over the same wire at the same time without in any way interfering with the famous tenor's voice.

Of Uncle Sam's recent innovations in technical equipment none bids fair to ultimately work greater wonders than the lately introduced Pulmotor. The Pulmotor is a delicate adjusted machine that occupied a portable case not much larger than the ordinary dress-suit case, and its function is to bring back to life persons supposed to be dead. The government provided the first of these new miracle workers for the use of the newly established United States bureau of mines in its work of rescuing men overcome by the poisonous gases in coal mines, but the advent of the invention is opening up life-saving possibilities in other fields, as, for instance, at bathing beaches and in city hospitals—in short in any case where death is threatened through the filling of the lungs with gas or water.

The Pulmotor is, in effect, an automatic breathing machine, its function being to draw the poisonous gases out of the lungs and to force into the lungs in turn the life-giving oxygen. The mechanism includes a cylinder in which oxygen is stored under pressure, a blowing and suction valve actuated by two accordion bellows, and a hood or mask which fits over the mouth and nostrils of the patient, making an



THE MOST POWERFUL MAGNET IN THE WORLD

air-tight connection between the human lungs and the mechanical lungs of the machine. It is said of this new invention that it will "make a corpse breathe," meaning that it will compel the diaphragm to move in a body in which life is wholly extinct. The new device costs \$800, making it one of the world's most expensive pieces of rescue equipment, as it is certainly one of the most effective. Comparatively little experience is required for its successful operation.

Government officials have within the past few months invented several new machines for quickening and cheapening the manufacture of paper money and postage stamps and whereas these inventions may not find very extensive adoption outside the government workshops, they will exert an important influence there. Among these new inventions is a remarkable combination machine which at one operation stamps the successive serial number on each bank note, impresses in color the official seal, cuts the sheets of money into individual notes and counts the bills—tasks that formerly required as many different machines and an immense expenditure of time. Another new invention is a machine which automatically trims at one stroke all four edges of a sheet of bank notes. A third new invention is a machine for automatically wetting the sheets of paper used in printing our currency—a chore that had for-



TRANSMITTING PHONOGRAPH MUSIC BY PHONE



ANOTHER NEW-STYLE MAIL CONVEYOR

appreciated by comparatively few of our citizens, an operator of scientific laboratories, a manufacturer and a business corporation. Now with Uncle Sam in the actual conduct of arts and industries on a greater scale, in some instances, than they are being carried on by any private corporation, it has become imperative from the hard, practical business standpoint that the government shall have the benefit of the highest possible attainments in time and labor-saving equipment.

In the effort to keep abreast of or a little ahead of the world's march of progress, the federal establishment has continually carried on tests and experiment with a view to disclosing new capabilities in instruments and apparatus of one kind or another that rank as commercial products and as such may be bought in the open market. But a large share of what has been accomplished these past few years has been due to new inventions evolved by government officials. And it is pleasing to note that there is an increasing disposition on part of the men on Uncle Sam's payroll to regard as federal property the inventions from which they might otherwise reap a fortune. There have, from time to time, been charges and rumors putting in question the ethics and honesty of men who derived private wealth from inventions alleged to have been worked out in government time and with the aid of facilities offered by a governmental position. Happily, however, such cases appear to be growing more rare and to counterbalance the isolated instances we have examples such as recently afforded by Major Squier, assistant chief signal officer of the United States army, when he dedicated to the free use of the American people the patents covering his new system of multiplex telephony.

Some of the most spectacular of Uncle Sam's current scientific triumphs are being worked out by the aid of the most powerful magnet in the world, which has recently been installed at a cost of \$1,200 at the United States bureau of standards. This magnet is in effect an enlarged edition of the familiar toy from which small boys derive so much enjoyment and it may be whispered that the government scientists are getting a proportionate amount of excitement from the almost miraculous powers of this largest of all magnets. Primarily the new magnet is employed by the government experts for optical work of the most highly technical character—a pushing back of the bounds of the unknown in this scientific field—

STONE IN BLADDER REMOVED IN REMARKABLE WAY

A year and a half ago I was taken with a severe attack of kidney trouble that pained me to such an extent that morphine had to be given me. Was attended by a doctor who pronounced it as stone in the bladder and prescribed Lithia Water. I took Lithia Water and tablets for some time and received no relief from them. I stopped taking medicines for some time and having some Dr. Kilmer's Swamp-Root in the house, I decided to try it and felt much relieved; while taking the second bottle commenced to pass gravel in urine until I had passed in all at least a half a dozen or more and have not suffered the slightest since and in all have taken one bottle and a half and feel very grateful to Dr. Kilmer's Swamp-Root. Yours very truly,
H. W. SPINKS,
Camp Hill, Ala.

Personally appeared before me this 16th of August, 1909, H. W. Spinks, who subscribed the above statement and made oath that same is true in substance and in fact.

A. B. LEE,
Notary Public.

Letter to Dr. Kilmer & Co., Binghamton, N. Y.
Prove What Swamp-Root Will Do For You Send to Dr. Kilmer & Co., Binghamton, N. Y., for a sample bottle. It will convince anyone. You will also receive a booklet of valuable information, telling all about the kidneys and bladder. When writing, be sure and mention this paper. For sale at all drug stores. Price fifty-cents and one-dollar.

Should Report Tuberculosis Cases. The National Association for the Study and Prevention of Tuberculosis says that the first requisite for a comprehensive campaign for the elimination of tuberculosis in a state or city is well-enforced law requiring that every living case of tuberculosis be reported to the health authorities. Such reporting is now required by law or health regulation in 25 states, white in 28 states and territories no provision whatever is made for keeping record of cases of this infectious disease. Several cities in non-registration states, as for instance, Chicago, Cleveland, St. Louis, and New Orleans, have local ordinances requiring that tuberculosis be reported. In all, there are about 100 cities in the United States which have ordinances of this nature.

Awful Contingency. "What are you girls doing?" "Settling our costumes for the Shakespeare ball, mother." "Take my advice and wait. They may dig up something at any moment to prove there never was such a person, and then where would your Rosalind and Celia be?"

Important to Mothers Examine carefully every bottle of CASTORIA, a safe and sure remedy for infants and children, and see that it bears the Signature of *Dr. J. C. Fletcher*. In Use For Over 30 Years. Children Cry for Fletcher's Castoria.

All There is to It. "What constitutes a first-class society drama?" "Three acts, six gowns, and nine epigrams."

How can a man expect his wife to be interested in business when half the time he doesn't know the color of her last new dress?

The love of a man for his wife may be the real thing, but it doesn't seem to interfere with his appetite.

WOMEN MAY AVOID OPERATIONS

By taking Lydia E. Pinkham's Vegetable Compound

The following letter from Mrs. Orville Rock will prove how untrue it is for women to submit to the dangers of a surgical operation when it may be avoided by taking Lydia E. Pinkham's Vegetable Compound. She was four weeks in the hospital and came home suffering worse than before.

Here is her own statement.

Paw Paw, Mich.—"Two years ago I suffered very severely with a displacement. I could not be on my feet for a long time. My physician treated me for seven months without much relief and at last sent me to Ann Arbor for an operation. I was there four weeks and came home suffering worse than before. My mother advised me to try Lydia E. Pinkham's Vegetable Compound, and I did. Today I am well and strong and do all my own housework. I owe my health to Lydia E. Pinkham's Vegetable Compound and advise my friends who are afflicted with any female complaint to try it."—Mrs. ORVILLE ROCK, R. R. No. 5, Paw Paw, Michigan.

If you are ill do not drag along until an operation is necessary, but at once take Lydia E. Pinkham's Vegetable Compound.

For thirty years it has been the standard remedy for women's ills, and has positively restored the health of thousands of women. Why don't you try it?

DIXIE PICKINGS
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