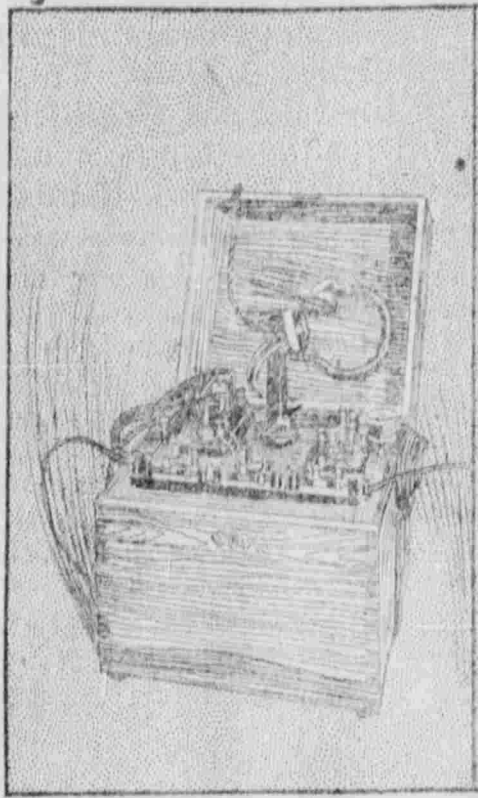


The Government's New System of Wireless Telegraphy

It happens occasionally, though only occasionally, that the United States is outstripped in the field of invention. But even when that occurs she does not long lag in the race, but quickly forces her way to the front. It has been thus with one thing and another for the last century, and thus doubtless it will ever be, for the records show that of all the patents of value taken out in the entire world more than 75 per cent are issued to citizens or residents of the United States.

A few years ago when Marconi, the brilliant young Italian, startled the world with his announcement of the practicability of wireless telegraphy most persons scoffed. He demonstrated in an incontrovertible manner the validity of his claims, but as his experiments had been carried on over comparatively short stretches the world continued to scoff, even laughing outright when this daring young foreigner declared that within a very short time he should be able to send a wireless message across the Atlantic ocean. The world had its laugh and its joke at Marconi's expense, but now he and the other wireless men are doing all the smiling, for what Marconi predicted has come to pass, and what is more, it was done with such absurd ease that the public can hardly realize that such things can be. The joke of it all is that the cabling across the ocean is not an inch in advance of communicating with a point five miles distant, the only difficulty being in overcoming certain mechanical obstacles, any one of which may be easily swept aside by the wireless experts by the expenditure of money for proper equipment.

The world at large regards Marconi as the inventor of wireless telegraphy. Aside from the fact that the Hertzian waves, discovered by Dr. Hertz, form the basic principle of all of the systems so far exploited, it is a fact that the man who may with greatest propriety



THE RECEIVER.



DR. LEE DE FOREST.



DR. DE FOREST EXPERIMENTING.

be regarded as the inventor of wireless telegraphy is Dr. Branley of France, who early in the nineties had two stations working in a building. But the Frenchman practically went no further, being apparently content to leave his invention to the tender mercies of younger men with more time, means and energy at their command. Thus the development of wireless telegraphy was doubtless delayed by several years.

The Arco-Slaby, Fessenden and Marconi systems were the best known up to a very short time ago, when the information was given out that Lee De Forest, a young scientist of New York,

a graduate of Yale, had perfected a system of wireless telegraphy which was expected to overcome most of the objections urged against its predecessors. It must not be supposed, however, that De Forest had sprung full panoplied into the arena. For years he had been working, but he was wise enough not to take the world into his confidence until he had practically perfected his apparatus. Later on the army and navy departments of the United States adopted his system after exhaustive tests, and then the eyes of the scientific world were turned upon this man, who is but twenty-nine years of age

and had never been heard of before. Naturally any man following the individual whose name has become identified with a certain invention must have something new, some improvement, to offer. Otherwise there is no excuse for his presence in the field. What made the Marconi apparatus possible was the "coherer." It is asserted that this was invented in 1890 by Branley. The coherer consists of a glass tube, into the opposite ends of which electrodes are introduced. Between the inner ends of these electrodes, which do not quite touch, are placed metal filings. When the electrical or Hertzian

impulse is given, these filings are magnetized and close the circuit, thus half way actuating the receiving apparatus. But right here is where the trouble comes in with the coherer; there is nothing to break the circuit and produce the other half of the sound necessary to complete the telegraphic character. Marconi breaks this circuit by a sort of hammer blow, which, as it were, shakes the filings loose. As a matter of fact, this blow is administered by an instrument operated by a little local circuit. But, nevertheless, the coherer was and is an objection, as it markedly limits the capacity of the re-

ceiver. Marconi is said to have admitted as much and is even reported to have devised a plan for overcoming the necessity for the use of the coherer by means of something which he calls a "magnetic detector."

But Lee De Forest when he began his experimentation with wireless telegraphy was shrewd enough to see that the mechanical phases of the instruments must be reduced to a minimum. Accordingly he put the idea of the coherer out of his mind. In his instrument a "responder" is employed. The operator sits with a pair of ordinary telephone receivers at his ears, and the potentiality of the Hertzian impulse passing down the wires attached to the antenna on the pole registers in this receiver and is immediately written into message form. There is nothing to watch, nothing to handle; simply to record what comes of itself into your ears. And this, by the way, may come as rapidly as the operator is able to send it.

The simplicity of all wireless telegraph instruments is almost startling. To the layman the impression is given that it is impossible for the primitive looking apparatus to do the work for which it is made, and which, by the way, it does in a remarkably thorough manner. The De Forest is even more simple and uncomplicated than most of its competitors. The power for this comes from a dynamo. In the De Forest experimental quarters a direct current of 110 volts operates a motor, which in turn actuates a dynamo producing the necessary alternating current. By an ingenious arrangement this is "stepped up" to a voltage of 20,000.

Messages are sent by an ordinary Morse key, with a resulting noise that would put the average Fourth of July celebration to the blush. The size of the sparks thus brought into being and their businesslike snapping about the "spark balls" are usually sufficient to convince the layman that he is looking upon something decidedly out of the ordinary. The sender after getting his

message off simply pulls the switch and awaits his answer. The other message.

To an impartial observer, one would seem that the wireless telegraph would seem to be the most perfect problem with which the human mind has ever grappled. As already mentioned, the messages may be attended to, there is no interference whatever, waves made by the different stations can interfere with the messages of other stations. One can interfere with the messages of other stations, but this is not a matter of similar importance. It would be exceedingly awkward, for instance, during a war, to have a friendly ship. While these things are understood, the enemy could not be prevented from making use of his "wireless" means. There are already under construction the dynamo and under construction the equipment of a series of wireless stations across the Atlantic. The first of these will be located in Lower California, with stations at Honolulu, Manila and Hong Kong. The span from Honolulu to Manila, 3,000 miles, will be the longest in the world. Only six ships will be required to maintain a continuous service between the stations at Manila and Honolulu and the other stations.

Prominent Playwrights In the Calcium Glare of Publicity



CLYDE FITCH AT HIS DESK CUTTING COUPONS.

This is a snapshot of Clyde Fitch in his study very busily engaged in cutting coupons and doing his best to "look pleasant" at the same time. The author of "Sapho," "Nathan Hale," "Lovers' Lane," etc., is beyond a doubt the greatest living American playwright. In 1901 he had four successes running in four New York theaters at the same time. Like Beau Brummel, the hero of his first great hit, Mr. Fitch is a very well dressed man and a lover of the beautiful. His fad is collecting antique furniture and art objects. He is only thirty-seven years of age and is an eligible bachelor.



GEORGE ADE SHYLY FACING THE CAMERA MAN.

George Ade, famous as a humorist before he became a playwright, is the author of the farcical operas, "The Sultan of Sulu," "Peggy From Paris," etc. He is about 6 feet 2 inches tall, has a swarthy complexion and is a native of Indiana. His head is a literary mine, from which he extracts large chunks of the most fearful and wonderful slang. One day Henry E. Dixey, the witty actor, saw Ade, Dunne, the Dooley man, and Hobart, the creator of Dinkelspiel, sitting together. Throwing up both hands, Dixey cried, "God help the English language!" and swiftly passed on.



AUGUSTUS THOMAS CAST FOR A THINKING PART.

Augustus Thomas, author of those great American plays, "In Mizoura" and "Alabama," is a Missourian, and everybody in St. Louis calls him Gus. He was a page in congress, a law student, a railroad man and a reporter, an artist and editor before he struck his true winning gait as a dramatist. His great success, "Alabama," was written in three weeks. His first dramatic work to attract attention was "Editha's Burglar," which he later expanded into "The Burglar." He was years in getting recognition, but now his work is in great demand and has brought him fame and fortune.



PAUL KESTER DREAMING HE IS SEVEN FEET TALL.

Paul Kester, author of the plays "When Knighthood Was in Flower," "The Cavalier," "Zamar" and "Sweet Nell of Old Drury," is only about 5 feet 2 inches tall and probably weighs less than 100 pounds. A faithful student and a hard worker, he holds high rank among the playwrights of America. He is an Ohioan by birth and is only thirty-three years of age. His playwrighting career began at fourteen, and he was barely of age when Alexander Salvini the younger engaged him to do dramatic work, and Kester traveled with the actor for two years.



G. C. HAZELTON LOOKING FOR ANOTHER 'MISTRESS NELL.'

George C. Hazelton, Jr., who won fame with a single play, "Mistress Nell," the play that made Henrietta Crossman a very successful star, is a native of Wisconsin and a practicing lawyer in New York. Before he began the study of law he was much interested in the drama and dramatic writing, and to secure practical stage experience he acted one season with the Booth-Barrett company and two seasons with Modjeska. His first play was "Edgar Allan Poe," which was produced by Creston Clarke, but it was too gloomy to win success for its young author.



CHARLES KLEIN TAKING HIS 'HEARTSEASE' IN HIS STUDY.

Charles Klein, author of "Mr. Pickwick," "Heartsease," "Dr. Belgraff," "El Capitan" and coauthor of "The District Attorney," is a native of England and is thirty-six years old. He came to America in 1883 and for a number of years was an actor. His first play was a "locomotive melodrama" written around two lithographs. Minnie Palmer's manager happened to control and was called "A Mile a Minute." Klein says that the only thing about the play that wasn't rapid was the arrival of his royalties. In fact, they missed connections altogether.



E. E. ROSE LAYING OUT A NEW SCENARIO IN FIVE MINUTES.

Edward E. Rose, who dramatized "Richard Carvel," "Janice Pennington," "David Harum," "Rupert of Hohlstein" and other popular books, is the most prolific dramatist living today. He has declared that Rose turned to a new play every fifteen minutes. This is doubtless incorrect. He is a native of Quebec, Canada, and began playing acting in a barn when he was a knickerbocker. His serious dramatic career began at the Boston Museum when he was a "super" at \$250 a week. He is a hard worker and has made a great deal of money through his playwrighting.

Dr. Barrows and His Formalin Treatment For Septicaemia

MANY of the greatest discoveries by which mankind has benefited have directly resulted from accident, and this holds true in the case of Dr. Charles C. Barrows of New York city, whose formalin treatment for septicaemia has set the medical world by the ears. Perhaps it would be more accurate to describe what Dr. Barrows has done as merely a possibility full of promise for the relief of suffering mankind, for the doctor, with becoming modesty, declares that his treatment may or may not do all that the papers have ascribed to it.

Briefly, the history of Dr. Barrows' connection with the injection of formalin in cases of septicaemia is as follows: He was called to a woman who was apparently in extremis. She had given birth to a child, blood poisoning ensued, and there seemed to be no hope of saving her life. Had it not been for that fact it is probable that the formalin would never have been tried by Dr. Barrows. But he had long been interested in the matter of producing a germicide which, while effecting the desired result, would not be dangerous to the patient. He had heard that at the Loomis sanitarium in Liberty, N. Y., a solution of formalin had been used with apparently good effect in certain cases of incident tuberculosis. He had also read of the experiments of an English physician along these lines. He had long entertained the opinion that as the streptococci and tuberculi are practically identical, formalin might be useful in the treatment of the former disease.

Therefore, as the woman to whose bedside he had been called had under the known methods of treatment no chance to live, he determined as a last resort to try the formalin. Accordingly he had made a solution containing one-fifth of formalin. Of this he injected 500 cubic centimeters into the patient's left arm. At the time the temperature had reached 102, and it was considered remarkable that the woman did not die before the administration of the formalin. Following the injection her temperature continued to mount for a few moments, when it suddenly fell to 100, going after a few hours to 99. Eventually the woman recovered.

But Dr. Barrows, like other pioneers, was not destined to have all smooth sailing. Naturally his treatment was employed by others—men who in many cases were almost wholly ignorant of the proper method of administration. In at least one instance the patient was directly killed by the formalin, for while the physician in charge had given less than Dr. Barrows had employed in his first test, he did not take into account the "individual idiosyncrasies" of the sufferer. Then, too, the treatment has been tried in a number of cases in which the blood poisoning was produced through mechanical means and in which even though the formalin did all that was hoped, there was no chance of saving the life of the patient.

Indeed, in most of the cases in which the formalin treatment has failed signally it has not been tried until every other resource has been exhausted, when it was not wholly fair to expect success. But Dr. Barrows and several



DR. CHARLES C. BARROWS.



AS THE INTERVIEWER SEES HIM.

other physicians have saved life with this treatment, and, while the medical profession as a whole is still unwilling to admit that it will prove as efficacious as Dr. Barrows hopes, most of its members are fair enough to admit that the path blazed out by the New York physician is worth following.

Dr. Barrows does not appear to be inclined to take entire credit for the present application of formalin, despite the fact that he is undoubtedly the first man to employ it in cases of blood poisoning. Instead he freely acknowledges his indebtedness to a well known English physician, of whom he says: "I have learned since my use of formalin of the brilliant work of Dr. McGuire, who in December 1900, published an article in the London Lancet in which he described the use of formalin in tuberculosis. He injected a solution into his own veins in order to determine how much the human system could stand. He used enough of the solution to be equivalent to one-fifty thousandth of the amount of blood in the body. This is about the same quantity in which I have employed it."

There is no affectation in Dr. Barrows' statement that he regrets exceedingly the publicity given to his discovery, which, in his opinion, should not have been exploited in the secular press until some definite determination concerning it had been arrived at. In the opinion of many physicians, we might today have been using a tuberculous serum had it not been for the fact that Professor Koch was practically compelled by the German government to divulge in advance of his readiness to do so the process by which he compounded his lymph. The doctor

almost immediately gave up his experiments, being disgusted with the absurdity of the statements attributed to him and wounded to the quick by the attitude of many of his professional brethren who accepted as commonplace his statements which he felt to have carried, at least to physicians, their refutation with them. The conservative medical men of the day are now fearing that because of extravagant claims made for the formalin treatment, not by Dr. Barrows but by incompetent lay writers, light in medicine may go the way of Dr. Koch's lymph and be forever under fire.

Dr. Barrows is rather better than average in height. His complexion is somewhat florid, as though he has been bustling about, as perhaps he really has been doing. He has a private practice, which occupies much of his time, though he will not permit anything to interfere with his hospital ties. He was for several years a member in the United States army and in their campaigns against the Indians. During his experience of five years with Crook in Arizona he was practically always in the field, while he was not supposed to be in the fighting in Arizona during the campaign in Arizona during the eighties was not a bed of roses, but he attended to the wounded under fire.

The doctor is a native of New York, and is not yet forty years of age. He is a graduate of the University of Virginia and of New York university. He has been practicing in New York for about sixteen years.

FROM ODD CORNERS OF THE WORLD.

Upward of 4,000 British postoffice employees served in the South African campaign.

Taxes on foreign visitors and residents are proposed in the Vaud canton, Switzerland.

Baldness afflicts almost every young man who spends any length of time in the Philippines.

The box and python have the largest number of ribs of any animals, the number being 230 pairs.

Beds of rock salt have just been discovered 2,000 feet below the surface at Compline, Belgium.

It is alleged that there is only one doctor available for a population of 15,000 in the West Indian island of Nevis.

Nine eyes and three mouths were possessed by a colic puppy born recently at Henley, England. It only lived four hours.

The irrigated area of the United States is 2,519,588 acres, of which Colorado contains 1,611,271 and California 3,458,175.

Public gambling is likely to be abolished in Switzerland at an early date.

Two thousand Irish denizens have been advertised for by a dealer in Cork. One-half of the imports into this country are of materials for manufacturers.

Permission to acquire land has just been granted to the Jews in Russia.

Express letters and parcels are now carried by postoffice cyclists in Berlin.

Over 1,000 children attending Nottingham board schools have learned to swim.

For uttering a strong expression of disapproval while quarrelling with a constable at Vienna a nobleman has been fined 16s. 8d. for insulting the police.

Five thousand pounds is the value of a collection of historical uniforms which the Kaiser is lending to the exhibition to be held next year at St. Petersburg.

Posted on Dec. 31, 1896, to an address at Gibraltar, a letter has only just been returned to the sender in England through the dead letter office.

To rid themselves of the competition of the cheap products of prison labor Austrian manufacturers want the government to transport convicts beyond the sea.

Medicine as a profession for women is constantly growing in popularity in London. Women now holding medical degrees in Great Britain number more than 800.

After being hooked in the river Eden, a large salmon was "played" for five hours by three men, who relieved each other. Eventually the line broke and the fish escaped.

Missouri is now credited with the greatest corn yield, estimated at 215,000,000 bushels. Iowa is second, with 200,000,000 bushels.

Kansas and Nebraska follow.

As it was apparently a case of starvation, a bullock was starved to death in Spalding, England, when it was found to have been eating a tennis ball it had swallowed.