

Correspondence.

Hot Water for Ivy Poisoning.

To the Editor of the Scientific American:

Let me add my testimony to that of Mr. John Burroughs as to the efficacy of hot water in curing the poison by ivy. The best way of applying it is to keep a spirit lamp under the tin containing the water, and apply the water as hot as the skin will bear. The sensation of relief from the intolerable itching is so immediate and so complete that it is almost worth while to be poisoned by ivy to experience it.

WM. C. CHURCH.

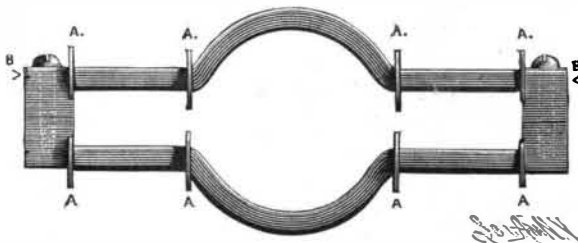
New York, March 29, 1888.

To the Editor of the Scientific American:

Referring to your issue March 17, page 165, "Electric Motor," Fig. 1. Can the field magnet be made of soft cast iron with flanges on, as per draught inclosed? Can the ring, B, of the armature, which is now made of iron wire, be made of soft cast iron?

FRANK M. HARMAN.

[Mr. Harman sends us a diagram of a field magnet of exactly the form illustrated in the article referred to, with flanges added. The article on the small motor was written for the express purpose of assisting amateurs who have few tools and no machinery. If all necessary tools are available, the motor may be modified in several particulars, to facilitate the work of construction, but without securing better final results. We give herewith an engraving of a magnet to be made of cast iron. Instead of being formed of a single casting, it consists of two like halves, both made from the same pattern. The ends, which are made square, are fitted together accurately either by planing or filing, and fastened together by screws or bolts, two at each end. The body of the cast iron field magnet should be fully one-half inch thick, and the ends one inch thick. The flanges, A, which confine the wire as well as the portions of the magnet on which wire is wound, should be covered with thin cloth before winding. The halves of the magnet are wound separately in a lathe, the ends being supported by the centers, B B, as shown.



It is not advisable to make the ring of cast iron. It should be as soft as possible.—EDS.]

Internal Strains of Guns.

To the Editor of the Scientific American:

I notice in your issue of March 24 some very proper statements in regard to the internal strains in the parts of built-up forged steel guns. But the statement, taken from *Engineering*, that the Russian General Kalakoutzky is the only one who has had a proper appreciation of the importance of considering these strains, is not quite accurate.

In 1885 an experiment was made at Watertown Arsenal, Mass., similar to those of General Kalakoutzky, for the purpose of determining the internal strains in the cast iron body for a 10 inch wire-wrapped rifle.

Subsequently similar experiments were made upon steel cylinders, and the character of the strains, as well as the method for eliminating them by annealing after oil tempering, made clear.

Full reports of these experiments were published in the annual Reports of the Chief of Ordnance, U. S. A. for the years 1886* and 1887.†

The methods were shown, by the subsequent publication of the results of General Kalakoutzky's experiments, to have been the same as those used by that officer.

WILLIAM CROZIER, Lieut. of Ordnance, U. S. A., 920 19th St., Washington, D. C., March 28, 1888.

A Typewriter of 1829.

A Washington correspondent of one of our daily papers says that evidence is about to be filed at the United States Patent Office which bids fair to prove that after all there is nothing new under the sun. The certificate is dated 1829, and is signed by Andrew Jackson. The drawings and specifications cover the invention of a typewriter. It is styled a typographer, and the original patent record was destroyed in the Patent Office a dozen years ago. The drawings of the time-stained patent closely resemble the construction of the modern typewriters. The patent was originally taken out by William C. Burt.

* Appendix 27a.

† Appendix 33.

The Reis Telephone.

In the recent hearing before the Commissioner of Patents, on motions made by McDonough and Gray to reopen the interference case between those parties and Bell and Edison, decided March 3, 1885, Colonel Ingersoll said: Mr. Commissioner, according to my idea, the first thing to examine or the first point that should be settled, is whether or not the evidence that was before the examiners and the evidence that was before the examiners in chief, and the evidence that is in this motion, absolutely show and establish beyond a reasonable controversy the fact that the Reis telephone, as invented by him, will speak. The importance of that is perfectly manifest from the further fact that McDonough claims an improvement on that system, so that the question is, Will the Reis telephone talk, was it intended to be, and was it, a speaking instrument? When that fact is established, the field is opened for anybody to patent any device connected with the transmission and receiving of speech. It seems to me that there can be no dispute as to that one fact. The invention of Reis was a telephone. He gave it the name. He made it for that purpose, and, according to testimony, he succeeded. He accomplished his object. First, as to whether the Reis telephone will talk. Upon that subject I first call your honor's attention to the affidavit of Professor Nipher, the professor of physics of Washington University, who states without the slightest hesitation that the instrument known as the Reis telephone will speak, that it will transmit articulate speech. He also says that there is no essential difference between the undulatory, pulsatory, and intermittent currents. The operation of the instrument of Reis does not differ in any way from the operation of the modern transmitter now in use.

The fact that Reis made so many different types of instruments containing the same elements which modern practice has shown to be essential is positive proof that he had the art of telephony clearly and correctly in his mind. The transmitters of Reis contain every essential element of the modern transmitter, and there can be no doubt that he constructed the instruments as he says. This man took the Reis instruments that were deposited in the Smithsonian Institution, at Washington, and his affidavit says that when he put them together in exact conformity with the directions of Philip Reis they talked—that articulate speech was transmitted. He simply says that it works. He was speaking through these instruments, words were transmitted, words were received. Can that be said of an instrument ever made by Mr. Bell up to February 14, 1876? Can it be said of any instrument or device made by Mr. Bell, or even drawn by Mr. Bell, up to 1877? It is very much easier for a man to make a machine talk who wants it to talk than for one who puts up a machine and adjusts it, having in his mind the firmly fixed prejudice that it is deaf and dumb. In spite of himself he will work for the corroboration of his theory, for the justification of his prejudice. You know as well as I that the instruments at that time—1861 and 1862, or in 1864—were extremely crude, and what the parts lacked in mechanical nicety had to be compensated for by precision of adjustment.

The Commissioner: I understand the other side to say they think that there are, now and then, certain conditions that make the instrument equivalent to a microphone, and that a word would escape the Reis invention.

Mr. Ingersoll: I understand that point, and it is the easiest thing to destroy that little rampart of nonsense that has been put in front of the Bell invention. Everybody will admit—everybody in the world, including the gentlemen on the other side—that the office of the receiver is to reproduce what has been produced. Now, if the transmitter invented by Reis will not so affect the electrical condition of the wire, or, to use other language, will not impress voice waves or sound waves upon the current of electricity, then no receiver could give out human speech, because the receiver can only take what is given it; and unless the invention is such that it sends the composite wave, that is to say, a wave representing a pitch or quality, tone or form, the receiver cannot take and reproduce such a wave. I will show before I get through, even by Mr. Cross, that this transmitter of Reis will convey speech to the receiver invented by McDonough, and will itself give articulate speech to the listener at the receiving end. I do not believe the history of the world will give such a record of intellectual impudence as this case. They stand now before you, and without changing complexion say that Reis made a stumble; that he did not know what he was doing; that all he did was to stub his toe upon a hidden fact in nature; that his only intention was to produce and reproduce musical tone. That was all, and yet Reis himself says he labored with a view to producing the total actions of all the organs apparent in human speech. Suppose, gentlemen, that had been in Bell's fifth claim, how easy, how much easier, the task would have been! You cannot, from his patent of March 7, 1876, show, you cannot raise a suspicion, that he had a speaking telephone in his brain, and I hope to show before I get through that

he didn't. But suppose these words had been there: "I propose at one time to produce the total action of all organs apparent in human speech, my object being to convey speech at a great distance by means of electricity and of the devices that I describe." If that had been in Mr. Bell's fifth claim, would anybody have had the impudence to say that he was not thinking about a telephone? Would anybody say, then, that he had stubbed his toe on a hidden fact in nature? Now, then, if all these witnesses swear, the witnesses who have tried it, witnesses who have demonstrated it, that the Reis instrument will talk, and Reis' object is to produce speech, and the evidence is that he succeeded, what right has anybody to say that this is an error, that this is an idea not born, still lingering in the womb of time? When we take into consideration the state of the art at that time, the devices of Reis are simply marvelous. Can there be any doubt upon this one question? If this decision, made by the examiners in chief, is based upon the assumption that the Reis instruments will not transmit speech, then they are in error, and their judgment should be set aside. Now, we have proved two things. First, the transmitter talks with the Reis receiver; it talks better with the Bell receiver. It talks with a better transmitter, but the transmitter and receiver as constructed by Reis will transmit articulate speech. When you talk to it so loudly that it refuses to transmit, it is not an infringement of Bell's claims. When you talk to it softly, so that speech is transmitted, then you violate Bell's claims. In other words, the absolute question is whether Bell's patent rests on the difference of tone. If you speak loud, they say it does. Here comes Mr. Bell and says: "I have got the theory. True, I had no machine, I had no device except a fragrant odor of expectation blowing like a broken cloud in my brain, but I have got the theory. You have got to have an undulatory and continuous current." "But," says another, "I can break it many thousand times a second." "Well," replies Mr. Bell, "if you break it too often, it becomes continuous, and then you infringe." The Reis instruments will speak, and I say now I am willing to risk the entire case and everything connected with it upon the simple question: "Will this instrument that I now touch (referring to the instrument on the table) transmit articulate speech?" and I may say beyond a doubt it is an exact facsimile of the Patent Office model and it will transmit speech. Yet that is the instrument that won't talk. That is the instrument that has the impudence to fly in the face of a theory of Professor Cross. That is a fact that just stands right up and denies a theory, and you can imagine the impudence it takes in a fact to do a thing like that, especially a Western fact, in the presence of an Eastern theory.

Among other reasons for demanding a new trial, Mr. Ingersoll declared that when the motion was submitted to Commissioner Butterworth he distinctly stated that if he found that he had to decide it against the Bell people, he would send it to his successor.

Educate the Coming Man.

We have often referred to the importance of training boys in some systematic and thorough manner for the serious business of life. It should be urged for not only the mechanical pursuits, but also for those who propose to embark in the higher paths of professional work. Many an architectural student in this country, wisely says the *Northwestern Architect*, would be better prepared for the struggle for success in his profession had he been the recipient of a sound technical education before entering upon his pupilage. In the past most of the hue and cry has been for the better technical education of the artisans, and it would be well for the architectural profession not to lose sight of the fact that the education of the master should increase in proportion to the advancement made by the workman. We want a better and more widely diffused method of technical education for both the artisan and the master. It is, however, expensive business, and while some of our schools and colleges have provided laboratories and workshops, there is a wider range of general technical education than has as yet found lodgment in the West. We know of no country where the lack of good preparatory schools into which the more promising pupils from the elementary grades could be draughted is more severely felt than in this, and the endowments of philanthropic gentlemen could not be better employed than by providing for this most necessary education. The benefit to the country would be so great that the establishment of the schools would become a matter of national concern, and if our country's prosperity is not to become a thing of the past, we must develop the latent resources of intellect and talent among our workmen to a greater extent than ever before.

NOTE.—Mr. Daniel H. James, whose improved extension gauge for use in planing, turning, etc., was described and illustrated on page 195 of the issue of March 31, 1888, desires us to state that his address is 347 Pear Street, Scranton, Pa.