small portion on a small frog, The frog died after developing the tetanus characteristic of strychnine poisoning. The case is of interest because of the length of time which elapsed before the body was exumed, there being few, if any, cases recorded where strychnine has been found in an exhumed body after so long a time; also, because a considerable portion of the strychnine was retained in the fatty matter and required different means from those usually employed for its separation. A full account of the case will appear in the Journal of the American Chemical Society.

THE ABSORPTION OF POISON BY DEAD ANIMAL TISSUE. By P. S. BAKER.

The alarming frequency of the criminal use of arsenic has led to the study of its effects on the bodies of living and dead animals.

There has been reason to believe that arsenic was introduced into the bodies of men after death, and that involved the investigations of the courts in more or less confusion. Inquiries have therefore been made as to whether arsenic may or may not be absorbed by the corpse from external sources, and the answers to these inquiries have never been satisfactory.

The author has found by numerous experiments on cats that arsenic injected under the skin, from twenty to thirty minutes after death, will penetrate to the internal organs; but if the injection be made later than seventeen hours after death, it could not be found in the internal organs.

The work is still in progress to answer several questions involved in the study.

ON THE VARIATION OF STRENGTH OF TIMBER AT DIFFERENT PARTS OF THE CROSS SECTION OF THE TREE. By PROF. T. GRAY.

[ABSTRACT,]

In Bulletin No. 8, of the Forestry Division of the U. S. Department of Agriculture, Prof. J. B. Johnston refers to this subject in connection with a series of tests on long-leafed pine. Prof. Johnston's experiments showed a variation of about 12 per cent. of the average tensile strength, the maximum being, for butt logs, at least, about one-third of the radius from the center of the tree.

A few weeks ago while making some tests of the strength of burr oak and white oak, I was rather surprised to find a variation of tensile strength of much greater amount than that obtained by Prof. Johnston for pine. In the case of the white oak the strength varied from 12,000 pounds per square inch at about one and a half inches from the surface of the tree to about 24,000 pounds per square inch at a similar distance from the center. The log was about ten inches radius and the variation was nearly uniform from the outside to the center. The burr oak showed a similar variation, but unfortunately the record of some of the tests, taken when I was unable to attend personally to the matter, have been lost. I have since made similar tests on water oak and on red oak. The results in the water oak show no decided variation across the sections. The average strength was about 14,000 pounds per square inch, and as nearly uniform as is to be expected in tests of timber. The red oak was also much more nearly uniform in strength across the sections than the white oak, but in this case there was good evidence that the outside wood was the stronger, especially on the side of the tree which had the larger growth. The variation in this case was from about 15,000 pounds on the square inch at the center to 18,000 pounds on the square inch at the outside. The stronger timber was, however, in this case, confined to about three inches of the outer end of the radius.

On an autographic method of testing the magnetic qualities of iron. By Prof. T. Gray.

[Abstract.]

At last Christmas meeting of the Indiana Academy I gave a brief description of some experiments which I had made on the magnetic qualities of iron and of the results I had obtained in these experiments, which were of a preliminary character. The general principle of the method was to deduce the magnetic properties of the iron from the electro magnetic inertia of a circuit composed mainly of a magnetizing coil surrounding the iron. This electro-magnetic inertia is evidenced by the relative values at each instant of the impressed e. m. f. on, and the current flowing through the circuit when one or both of these quantities is varying. Since that meeting I have been successful in making use of an autographic device for recording the variations of the current during its rise from zero to a maximum immediately after the circuit is closed on a constant battery. The e. m. f. is in this case constant, and the variation of the current indicates the electro-magnetic inertia, and consequently, magnetic quality of the iron.

The autographic apparatus consists of a modification of the Thomson siphon recorder, used for submarine telegraphy. A rectangular coil of a few turns is suspended between the poles of a powerful electro-magnet which is separately excited. The coil is made to form part of the electric circuit containing the magnetizing coil, and hence, as the current varies in the circuit, the coil turns between the poles of the magnet. A long, glass siphon pen records the motion of the coil, or rather its position at every instant, on the record sheet of a chronograph. We thus get a curve of which the abscissæ are intervals of time from the instant of closing the circuit and the ordinate strength of the current at the end of these intervals of time. This curve must be expressed by the equation $L\frac{dc}{dt}+RC=E$ where L is the coefficient of electro magnetic inertia of the circuit, R the resistance, C the current and E the impressed e. m. f. The product RC represents the e. m. f. required to keep a constant current C flowing through the circuit, and $L\frac{dc}{dt}$ represents the back e. m. f., due to self-induction. We may put the equation in the form $L\frac{dc}{dt}=E-RC=e$, or, $Ldc=edt$. The quantity e at any instant is the difference between the ordinate at that instant and the maximim ordinate of the curve when the impressed e. m. f. curve is drawn to such a scale as to coincide with the maximum value of the current curve. We then get e readily from the curve. Also edt is the increase of induction in time dt, and therefore the area included between the current curve and the e. m. f. curve up to any instant gives, when multiplied by the proper constant, the total induction up to that instant. These different inductions, when expressed graphically, with magneto-motive forces derived from the strength of the current and the proper constants of the magnetizing coil as abscissæ, give the ordinary magnetization curve. From this curve the permeability of the material, the dissipation of energy in cyclic action, and so forth, can be readily derived in the ordinary way.