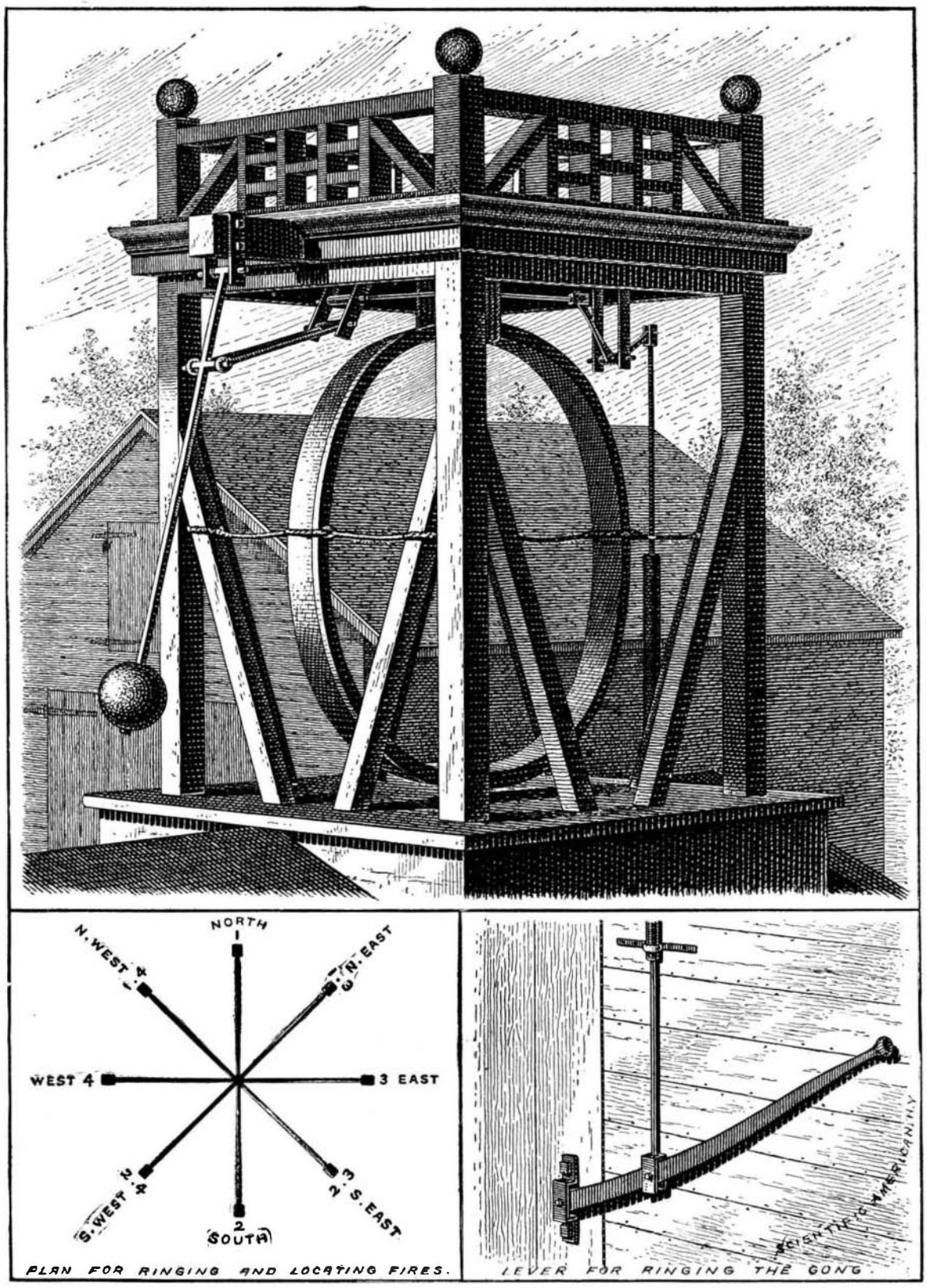
AN ECONOMICAL FIRE ALARM.

The present illustration is taken from the fire alarm at Boiling Springs, opposite Rutherford, N. J. The machinery for striking the gong or ring was made by a blacksmith of the town. The gong is held up in place by means of a ⅝ inch wire rope which goes around the gong and over a heavy piece of timber at the top of the tower. The striking apparatus with bearings are also connected to this piece of timber. These bearings are made of 2×½ bar iron and the striking material mostly of ⅝ inch round iron. The L shaped bell crank with shaft is forged in one piece. The lower section of bell crank and the lever below are joined together by means of a piece of ⅝ inch round iron with a forked connection at the top and bottom. This piece of iron runs through a piece of gas pipe which is bolted to the floor as a support. One end of the lever works inside of a yoke which is bolted to the side of building. To throw the clapper or ball back the lever is drawn upward, which throws the upright part of crank with forked connection backward, which in turn forces back the clapper. By pushing the lever down the clapper strikes the gong. The gong is a 6 foot tire of a driving wheel of a locomotive, is 1¾ inches in thickness, 6 inches in width and weighs 500 pounds. It yields a deep tone like a bell. On a still night it can be heard about two miles. The clapper weighs about forty pounds. A plan has been adopted for locating the direction of fires by strokes of the gong. One stroke indicates that the fire is in the northern section of the town. Two strokes, south. Three strokes east. Four strokes, west. One stroke and a pause and then three strokes, indicates a fire in the northeast. Two and three strokes, southeast. One and four strokes, northwest. Two and four strokes southwest. This fire alarm has been very satisfactory, costing, with gong and machinery, with labor, the small sum of $25.



LOCOMOTIVE TIRE USED AS A FIRE ALARM BELL.

Distillation of Wood.

At a recent meeting of the Society of Chemical Industry, London, Prof. Ramsey read a paper by himself and Mr. J. C. Chorley on "The Distillation of Wood." The communication being one which dealt with a number of tabulated details rather than general conclusions, was wisely given in abstract form. Prof. Ramsey remarked that although wood had been distilled for at least 100 years, yet but little had been done to investigate the precise character of the reactions which went on, and the nature of the products which were obtained. Of the main products of distillation, which were water, acetic acid, methyl alcohol, and wood creosote, and charcoal left as a residue in the retort, the first was of course valueless, the next two largely utilized, while the creosote, with the exception of a little which was purified for dentists' use, was not generally considered of much account; the utilization of the charcoal depended upon the kind of wood that had been employed. That from oak and beech was consumed in the foundry, while charcoal from willow and alder was preferred for the manufacture of gunpowder. After recounting the numerous substances which accompanied the main products, Prof. Ramsey pointed out that our knowledge of what was going on in the interior of the retort was necessarily very limited, as the temperature could not be accurately ascertained. In order to investigate the phenomena of distillation more closely, a small-size apparatus had been devised, consisting of a flask in which the wood was distilled, surrounded by a triple air jacket and provided with a thermometer, connected with condensing and receiving vessels, the further end of which was coupled to a gas holder. A connection was made to a water pump, so that at the beginning of the experiment a fair vacuum could be obtained throughout the apparatus, and thus the true amount of permanent gases yielded by the wood determined. The method adopted for estimating the methyl alcohol, though confessedly crude, was in the authors' opinion the best that was applicable under the circumstances. It consisted essentially in oxidizing that portion of the distillate containing the alcohol with potassium bichromate and sulphuric acid, and determining the carbonic acid given off. Some light was thrown on the degree of reliability of this method by the fact that the amount of methyl alcohol recorded as being obtained from different woods varied enormously, a result which was not confirmed by the yield on the large scale, the variations under manufacturing conditions being, it is true, in the same direction as those in the laboratory apparatus, but showing smaller and less violent fluctuations. Strictly speaking, therefore, it was necessary to consider the results obtained by this method as indicating the amount of "oxidizable matter calculated as methyl alcohol," rather than to assume that they represented methyl alcohol itself. The change that went on during the distillation of wood became exothermic at a certain point, the stage being marked by a sudden evolution of gas, without additional or more vigorous firing. On account of the occurrence of this exothermic change, the authors ventured on the somewhat paradoxical course of regarding wood as an explosive. The yield of acetic acid was remarkably constant even with different woods, and its evolution might be taken to start from the time when the wood, in the authors' phrase, "begins to explode" and to cease with the explosion. Furfural was similarly a product of "explosion." The products from the distillation of wood varied not only with the nature of the wood, but with its place of origin and state of seasoning. A smaller yield of acetic acid was obtained with wet wood. In the discussion which followed, Mr. Blount took exception to the use of the word "explosion" for a change of this character, and characterized it as an abuse of terms. Mr. C. F. Cross spoke of analogous changes such as occur in the formation of ensilage from grass, and pointed out that the distillation of cellulose itself from various sources would be likely to give suggestive results. Mr. Watson Smith, speaking as an old wood distiller, said that it did not appear that any severe rise of temperature took place during distillation. It was true that when the charcoal was drawn it might take fire, but this might well be due to the condensation of air in its pores. Mr. A. G. Green pointed out that a more satisfactory method of estimating methyl alcohol than that described might easily have been used. Mr. Biggs complained of the attitude of the inland revenue authorities toward the producers of methyl alcohol. One at least was induced to experiment in order to obtain a pure product, and when success had been attained, was confronted with the fact that the full duty would be levied upon the spirit because of its potability. Professor Ramsey, in reply, defended the use of the term "explosive," and intimated that he was prepared to denote many substances and reactions not usually thus included by that term.—*Chem. Tr. Jour.*

The University of Chicago.

The University of Chicago will soon be one of the greatest educational establishments in the country. Mr. John D. Rockefeller of New York, in addition to large contributions to this institution previously made, has lately added the munificent sum of $2,000,000; and other large amounts by other contributors have been made, so that the institution will have a splendid endowment, the total being nearly $5,000,000. The ground occupied by the University has an area of some 24 acres. It is situated between the two great parks—Jackson Park and Washington Park. Three buildings now under way are the Divinity Dormitory, the University Dormitory, and the Recitation Building or Lecture Hall.

Professor William Rainey Harper, of Yale University, has been chosen president. He is a young man, 37 years old. He is professor of the Semitic languages and literature. Dr. E. G. Robinson, late President of Brown University, and J. H. Tufts have charge of the Department of Philosophy. Professor J. Lawrence Laughlin, late of Cornell University, is the head of the Department of Political Economy and Finance. He is assisted by Professor Adolph C. Miller. Dr. Hermann Eduard Von Holst, of Freiburg, Germany, also takes a professorship. He will be assisted by a number of distinguished and able professors. The Department of Physical Culture is to be under charge of Professor A. A. Stagg. William C. Wilkinson is Professor of Rhetoric. E. H. Moore, Professor of Mathematics. The Library is in charge of Mrs. Zella A. Dixon and Miss Julia Bulkley. The University is to be open to both sexes.

A STEEL rail lasts, with average wear, about eighteen years.