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AN UNFORTUNATE COMPROMISE.

It is greatly to be regretted that the naval authorities should have compromised on the question of superposed turrets by deciding to build three of our new battleships with such turrets and two without them. The compromise is suggestive of indecision or uncertainty, or at least of lack of harmony on a question which has surely been long enough in debate and on trial to afford ground for definite action. We have the "Oregon" and the "Iowa" as representatives of one type, and the "Kearsarge" and "Kentucky" of the other, and surely by this time the officers of the line and staff have sufficient technical data and sufficient "sweet reasonableness" at command, to be able to get together and decide definitely which type to adopt.

As the matter now stands, there is every reason why a unanimous vote should be given—for the staff, in the person of the naval constructors, have stated that there is no structural objection to the turrets, and the line, in the person of the captains and admirals who fight the ships, are agreed that there is every military reason why they should be adopted. Being thus approved on both structural and military grounds by the experts who are severally qualified to speak from these points of view, where, the puzzled layman will ask, is the bone of contention?

We understand that the last word has yet to be spoken and the last vote taken on this question; and hence there will be an opportunity for the department to reconsider its recent regrettable decision, and commit itself to one type or the other by a unanimous vote.

GARBAGE DISPOSAL OF NEW YORK CITY.

Without entering into the merits of the controversy regarding the Barren Island reduction works, there is no denying that the recent action of the state officials in forbidding the reduction of garbage on the island by the present methods will bring this city face to face with a very serious problem.

In spite of the offensive odors which prompted the recent complaint from the residents in the neighborhood of the reduction works, there is no question that the plant did get rid of an enormous amount of organic refuse, which must otherwise have been left upon the hands of the Street Cleaning Department. Recent figures state that every year 150,000 tons of swill alone, not to mention other forms of refuse, have to be disposed of in some manner consistent with the public health. It will be a decided step backward if the material, which at present is rendered innocuous at Barren Island, were to be added to the garbage which is taken out on scows and dumped into the sea outside the harbor. Such a step would seem to postpone indefinitely the time for which we have all been hoping, when this primitive and, we almost said, disgraceful way of disposing of the city's wastes will be entirely abolished. The miscellaneous rubbish which strews the shores of New Jersey and Long Island, and spreads its disgusting fringe over the various beaches of the lower bay, bears painful witness to the fact that this great city has never yet grappled seriously and scientifically with the problem of garbage disposal.

The foregoing statement is made with full knowledge of the fact that a spasmodic and incomplete attempt was made a few years ago to get rid of a portion of the city's wastes by a method of sorting and burning. While every credit is due to the late Colonel Waring for putting up this experimental plant, it seems that the scheme was inaugurated on too small a scale, and was subsequently too heavily handicapped by political drawbacks, to afford very reliable data as to the cost and efficiency of the process.

Whatever method is to be pursued in the immediate future, it is certain that before long New York must cease to throw its rubbish into the sea and devise some less primitive method. Obviously the first step should be the appointment of an expert commission to go thoroughly into the whole question of garbage disposal, examine the plants installed in various great cities, both here and abroad, and determine upon a system which would best meet the local conditions in New York city.

RELATION BETWEEN TRANSVERSE AND CRUSHING STRENGTH OF TIMBER.

One can scarcely overestimate the value of the elaborate timber investigations planned and carried on by Dr. Fernow as Chief of the Division of Forestry. For many years there has been a great demand for more accurate data respecting the strength of timber, especially when used for heavy structural work. The text books, it is true, have provided tables which are based upon more or less careful investigations; but there is so much divergence between the different authorities, and there are so many varieties of timber, the data regarding whose strength is based upon imperfect experiments, that there has been a pressing necessity for a more comprehensive and scientific investigation.

There is no country where the possibilities of timber as a structural material for heavy engineering work have been more clearly demonstrated than in the United States; and although mild structural steel has displaced timber in many branches of engineering and architecture, timber is still used, and will continue to be used, extensively in many important lines of work for years to come.

One of the most important results of the present timber investigations is the discovery of the relation between the strength of a beam and of a column of the same material, which relation has been deduced and mathematically developed from the many thousand tests made during the extended general test series. During the present winter tests carried out under the auspices of Prof. Roth, of the New York State College of Forestry, furnished experimental proof of the correctness of this relation, which is, that the strength of a beam at the elastic limit is equal to the strength of the material in endwise compression. That is to say, in order to determine what load a beam will carry without injury to its elastic properties, it is sufficient to test the material in compression to the point of failure. The load under which failure occurs is also the breaking load for a beam strained to the elastic limit. The practical value of this discovery is evident; for a simple test in compression gives, without the introduction of difficult formula, immediate answer to the important question of the strength of beam to safe limits. These tests, which were carried out by Prof. C. A. Martin and Mr. George Young, Jr., of Cornell University, removed any doubt as to whether wood possesses a definite elastic limit; which limit, although it is less pronounced in wood than it is in metals, is, nevertheless, readily recognized.

WIRELESS TELEGRAPHY IN SOUTH AFRICA.

The recent visit of Marconi to this country has, in some measure, revived the interest in his system of wireless telegraphy which was aroused during the memorable international yacht races of last summer. We learn that at the outbreak of the South African war an opportunity was presented for dispatching several of Marconi's assistants, and that they took with them complete outfits of wireless telegraphy instruments. It seems that at the outset of hostilities, the capabilities of wireless telegraphy, which were so readily appreciated by the naval authorities, did not seem to commend themselves to the commanders in the field. Instruments had been sent to Generals Buller, White and Methuen; but they failed to develop the plant, and seemed to have looked askance at the new invention, preferring to rely upon the old time heliograph and searchlight signals. In besieged Ladysmith communication was established by means of balloon, by electric signals thrown on the clouds, by heliograph, and even by homing pigeons; but no mention is made at any time of the use of wireless telegraphy, either by the forces in Ladysmith, or by the relief columns under Buller.

There were some generals, however, who gave the system a fair test, and it is characteristic of Lord Roberts that immediately upon assuming command in South Africa he appointed several experts in wireless telegraphy to accompany him. There have been ten instruments in Lord Roberts' army, and the operators have been given every facility to test the system. Little is known as to their practical working, except that it has been in the main satisfactory. The report which will ultimately be given will, no doubt, throw favorable light upon the practical value of wireless telegraphy in land operations. It is worthy of note that the difficulty of providing the necessary elevation for the vertical wire was met by making use of the form of kite designed by Baden-Powell, the brother of the defender of Mafeking.

RECENT DISCOVERIES IN CORINTH.

Four foreign countries, Germany, France, England and the United States, now have schools at Athens. Germany was the pioneer, and the others followed her lead. The United States has one building, and this year there are thirteen students, the largest number in the history of the school. Twenty-three colleges contribute to its support. There is a director, who is selected for a period of four years, and each year he is assisted by a professor who lectures on special subjects. Prof. Rufus B. Richardson, of Dartmouth College, has been director for the last eight years, and under his care the school has distinguished itself by its explorations at Corinth. Six of the students are women, and during the war with Turkey one of them served as a nurse. The school closes about the end of May, when it becomes too warm in Athens for regular work. Some of the students go to Corinth with Prof. Richardson, where they rent a house in the village and push the work of excavation as far as their means will permit.

This year's work at Corinth has been specially devoted to the finding of many small but important objects. It will be remembered that in three campaigns, one important building after another has been excavated, until at last the explorers found themselves inside the Agora. The establishment of the topography of such an important site was a brilliant success. This year they turned the west flank of the Propylæa, and they soon found the way blocked by marble blocks and statues. The first two statues found were a pair of colossal figures 8 feet high, wearing the Phrygian cap, attached to pilasters at the back. Two Corinthian square capitals fitted on to the tops of these pilasters. The figures appeared to assist in bearing at least the architrave, and they were analogous to the famous Caryatides. Two square bases which were also found fitted the figures. This enabled the whole system to be reconstructed from the bottom up.

There were also discovered various fragments of statues, including a very fine head of Ariadne. The crowning success of the year was the discovery made about 75 feet southwest of the western end of the Propylæa, when the explorers came upon the platform 3 feet high with a façade made of metopes and triglyphs, and a coping above them with red, blue and yellow paint still covering them, making a gorgeous show. The façade had a length of about 30 feet and for a part of its extent it had no platform behind and was simply a balustrade. At a bottom of a flight of seven steps was an irregularly shaped room about 25 feet below the surface. In the western wall of the room there were two bronze lions' heads, through the wide open mouths of which water once flowed. Beneath were round holes in the pavements in which pitchers were placed for filling. Prof. Richardson considers, says The Evening Post, that the fountain which the party discovered is an ancient Greek fountain and an absolute unique example. A guard is now mounted over it to prevent its being mutilated. The balustrade at the top of the steps is believed to be Roman in the sense that it was placed there when Corinth was refounded by Julius Cæsar, but it is Greek, and very interesting Greek, because it was taken from the temples which Mummius destroyed.

QUARTZ THERMOMETERS.

M. Dufour gives an account to the Academie des Sciences of a series of experiments which he has made regarding the use of quartz for thermometers and other instruments. As quartz may be softened in the oxyhydrogen blowpipe, and may then be worked like glass, he was able to make tubes of quartz, and afterward thermometers of the same material. Quartz may be applied to the construction of various apparatus, and may be of service; first, where a transparent substance and one not easily melted is required; secondly, where a transparent envelop of definite composition, but slightly affected by hygrometric conditions is called for. The first of these conditions is realized by the quartz thermometer, which consists of a reservoir of quartz and a tube of the same material. As for the liquid, it must be a body which it is easy to obtain in the pure state, and which melts at a relatively low temperature, giving off no vapors up to a red heat; moreover it should contract on solidifying. He finds that tin answers perfectly these conditions, and has constructed a thermometer, using tin as a metal, which reads from 240° to 580° C. As quartz softens only at 1,000° to 1,200°, a thermometer may be made which reads up to 900°; it can be graduated by utilizing the boiling points of mercury and sulphur and the level of the tin is well defined in the two cases. To go higher, the boiling points of cadmium and zinc may be taken. The thermometer was filled with melted tin and as perfect a vacuum as possible was obtained, after which the end was closed by the blowpipe. The last bubbles of air were taken out by melting the tin, while giving it repeated shocks. If the tin has traces of oxide, this adheres to the sides of the reservoir and remains fixed. The upper surface is always brilliant, and has the same appearance as mercury. The reservoir should have rather thick walls to avoid rupture when the metal cools.

M. Dufour hopes that quartz may supersede glass in the construction of vacuum tubes for spectroscope work; he observes that when a glass rod is melted in the oxyhydrogen blowpipe flame there is a disengagement of gas, which is due either to a reaction which is completed at this high temperature, or to the evolution of gases which have been previously dissolved in the glass; on the other hand, quartz melts quietly and no gas is given off. In experiments with spectroscopic tubes, difficulties are met with which