those who were interested in its founding. Perhaps it did not escape the faith or the vision of President Rogers, but he was unable to make those through whom he had to work see the future from his point of view, and had to be content with concessions that fell somewhat short of what he would have desired.

It is not strange that those who in this later day are responsible for the welfare of the institute should chafe under the restrictions of the original conditions and make an effort to secure greater freedom. The public has doubtless sympathized with them in that undertaking. It likes to see a service that is so broad and vital have a free field for its development. But the court decision makes all further discussion of this feature of the case unprofitable and we do not see that anything remains for the institute to do but to remain where it is and make the best of it. That 'best' can be very fruitful. The desire to obtain a more expansive location was based more on social considerations than on those which make for its main service. Doubtless the enlargement of social opportunities between students and classes would be a desirable feature of the life of the institution, but its fame and its usefulness can continue with unabated growth even with such expansion as is possible under existing conditions.

It certainly ought to be easy to reconcile the Boston public to this final judgment. It assures us the continuance of dignified and noble buildings and open spaces in a vicinity that we have been careful to guard against the invasions of commercialism. It will stand as a temple of science that is in harmony with its surroundings. It will continue to show to our own people and to the stranger within our gates that provision has been made for higher prizes than those of mere worldly gain. While Boston would prefer to keep its distinguished features by some other tie than that of duress, she can not be altogether inconsolable over the prospect that the Institute of Technology is likely to remain, in location, at least, a Boston institution.

It appears to be assumed in some quarters that this decision makes of no effect the tentative steps that have been taken toward a merger with the university beyond the Charles. This conclusion may be somewhat hasty, but should negotiations to that end still continue they will have to undergo a very radical change in terms. The plan which has been under consideration was based upon conditions that no longer exist, and that fact may or may not be fatal to the entire project. Should the decision have the effect of ending it, there is at least a very large proportion of the alumni who would not greatly mourn over the compulsion that seems to confine the institute to its present location. That it must expand is inevitable, and, while that may be more difficult than would be the case in some other section, it is by no means impossible, and the situation ought to awaken among its friends fresh zeal in its behalf.—*The Boston Transcript.*

NOTES ON INORGANIC CHEMISTRY.

TANTALUM AND ITS ALLOYS.

Patents have recently been taken out by Messrs. Siemens, Halske and Company, of Berlin, for tantalum alloys, which promise to be of much interest. The engineering supplement of the London *Times* gives quite a full description of the properties of the metal taken from the patent specifications, from which we note the following.

The metal is exceedingly strong and has great elasticity, and like steel is easily worked and hardened. Great hardness is imparted to it by small quantities of carbon, but other elements such as oxygen, hydrogen, silicon, boron, aluminum, titanium and tin can also be used. Very small traces of these elements are necessary to give hardness, and if larger quantities are used, the metal becomes very brittle and unworkable. In some cases the hardness attained is almost equal to that of the diamond. Like iron, tantalum, after being worked into shape, can be 'case hardened' by heating to redness in carbon. At ordinary temperatures tantalum is wholly unaffected by the atmosphere and resists the action of most acids. After being melted or highly heated the metal is comparatively soft and

easily worked, but with the working it gains rapidly in hardness, and must be carefully reheated or annealed before it can be further worked. As at high temperatures it is readily oxidized, its heating or fusion is best accomplished in a vacuum and by means of the electric current. Alloys of iron with a very small quantity of tantalum, and of tantalum with a very small quantity of iron seem to have an especial value. Owing to its great cost at present, the use of tantalum is necessarily very restricted, but if it shall ever be obtainable in considerable amounts it will have great value, especially for those parts of machinery which are subject to strong mechanical action, such as the cones and balls for ball bearings, cams, eccentrics and rollers.

TIN, TITANIUM AND COBALT STEELS.

IN a recent number of the *Comptes Rendus*, Guillet describes a study of a number of steels, some of which have already been more or less investigated by others. He finds that tin dissolves readily in iron, and if present to the extent of more than one per cent. renders the steel very hard but brittle. The carbon present never separates out as graphite. The mechanical properties of the titanium steels, when the proportion of titanium is not above nine per cent., are practically those of steel itself. The presence of cobalt, up to sixty per cent., has no effect upon the micro-structure of the steel and very little effect upon its mechanical properties. Guillet concludes from his investigations that none of these steels has any industrial value. This result is not wholly in accord with the work of other previous investigators, who have found that certain of these alloys, notably some of the titanium steels, give promise of industrial usefulness.

COPPER AS AN ANTISEPTIC AGAINST TYPHOID ORGANISMS.

QUITE an extensive paper has recently appeared in the *American Journal of Pharmacy* by Henry Kraemer, entitled 'The Use of Copper in Destroying Typhoid Organisms, and the Effects of Copper on Man.' After discussing the distribution and removal or destruction of typhoid organisms, the effect of copper on lower animals and plants is considered. The effect of water treated with copper on man and the elimination of the copper from water are next taken up, and finally the effect of copper in foods. It is, perhaps, worth while to quote the author's conclusions:

1. It is pretty well established that the typhoid organism is disseminated not only through water, but also through air and food, and may retain its vitality for a considerable period of time.

2. Typhoid organisms in water are eliminated by filtration, boiling and certain biochemical methods. Of the latter, the use of copper, as proposed by Moore and Kellermann, is probably the most efficient and at the same time most practicable.

3. While exceedingly minute quantities of copper in solution are toxic to certain unicellular organisms, as bacteria, it is safe to assume that the higher plants and animals, including man, are unaffected by solutions containing the same or even larger amounts of copper.

4. There being a number of factors which tend to eliminate copper from its solutions, it is hardly likely that there would be any copper in solution by the time the water from a reservoir reached the consumer, if the treatment of the reservoir were in competent hands.

5. Many plants contain relatively large amounts of copper, and when these are used as food some of the copper is taken up by the animal organism, but there are no records of any ill effects from copper so consumed.

In connection with this last paragraph, which is in its conclusion quite contrary to the usually accepted idea, numerous authorities and experiments are quoted, and the conclusion is probably well justified that very little danger is to be apprehended from either acute or chronic copper poisoning from copper present in water or foods.

J. L. H.

RECENT MUSEUM REPORTS.

THAT the annual report of a museum should, as a rule, appear from three months to a year late, doubtless strikes the average reader as extraordinary. But 'the average reader,' or the average man, frequently looks upon a museum as a haven of rest whose collections assemble, arrange and label themselves; as a