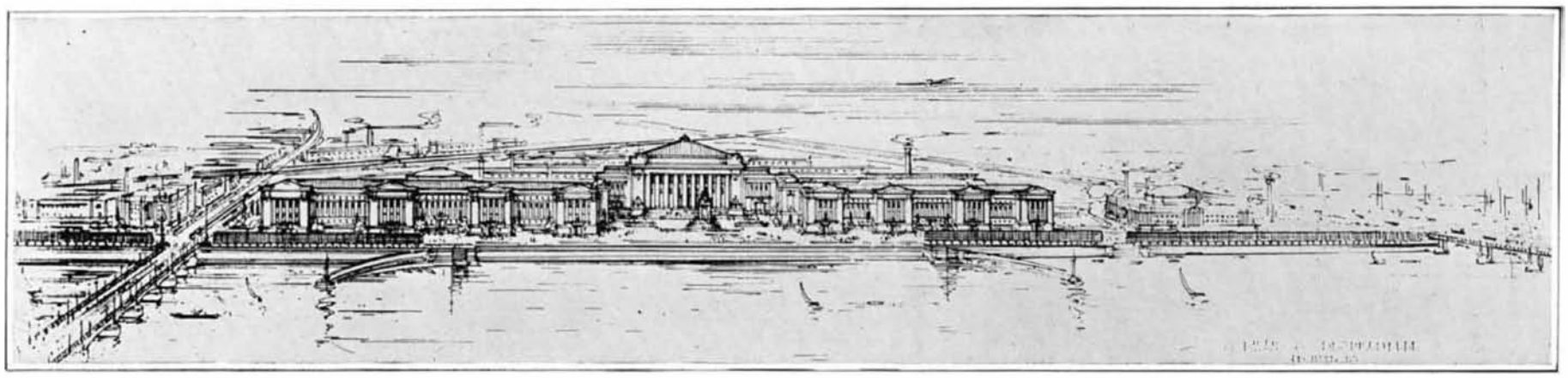


Sketch of the Massachusetts Institute of Technology made by Prof. Despradelle.

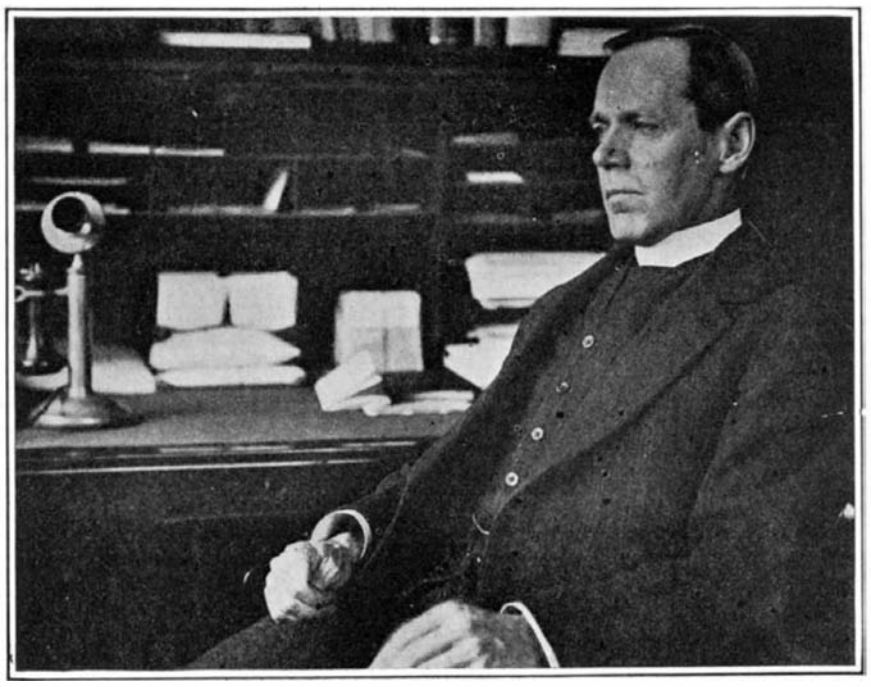
A Princely Gift for Technical Education

What the $2,500,000 Donation to the Massachusetts Institute of Technology Means

By John Ritchie, Jr.

TWO and a half million dollars to the Institute of Technology from an anonymous giver is striking news in the educational world. This gift has a good many points of contact with modern business, and is important in bearing on education. In the first place it is refreshing to find someone who can give a large sum without feeling the necessity of widespread personal advertisement, and again it is interesting to see that this gift is subject practically to no conditions. It is to be used for the buildings of the New Technology, and is waiting to be called for at any moment.

In his address at the convention of students when he anounced to them this splendid benefaction, Dr. Maclaurin said, "I am only just now beginning to realize its stupendous significance. It has made it possible for us to go ahead and plan the New Technology as a whole, and it will be built all together as one great unit. This I believe to be one of the greatest advantages of the gift, and it was distinctly the donor's intention that this should be made possible. The advantage of this over the usual method of constructing an institution's buildings one by one cannot be overestimated." The significance of the gift, entirely aside from the educational view point, is emphasis on the fact that this country can no longer be generally termed the "land of the almighty dollar." "There is no country in the world," said Dr. Maclaurin, "in which the wealthy contribute more for education, for art, and for philanthrophy, and in a gift like this there is the strongest evidence that successful men in the business world are coming to realize the necessity to their enterprises of technical education."



By courtesy of the Boston Herald.

President Maclaurin of the Massachusetts Institute of Technology.

To the Institute of Technology this gift means that the second of its great problems has been cleared away by a single man, just as the first of them, the purchase of its site, was solved by the half million dollar gift of T. C. du Pont.

With financial uncertainties in this particular out of the way, the Institute can now attack the problem of its new buildings, their arrangement and distribution as a single engineering problem, and will be able to erect on the Charles River em-

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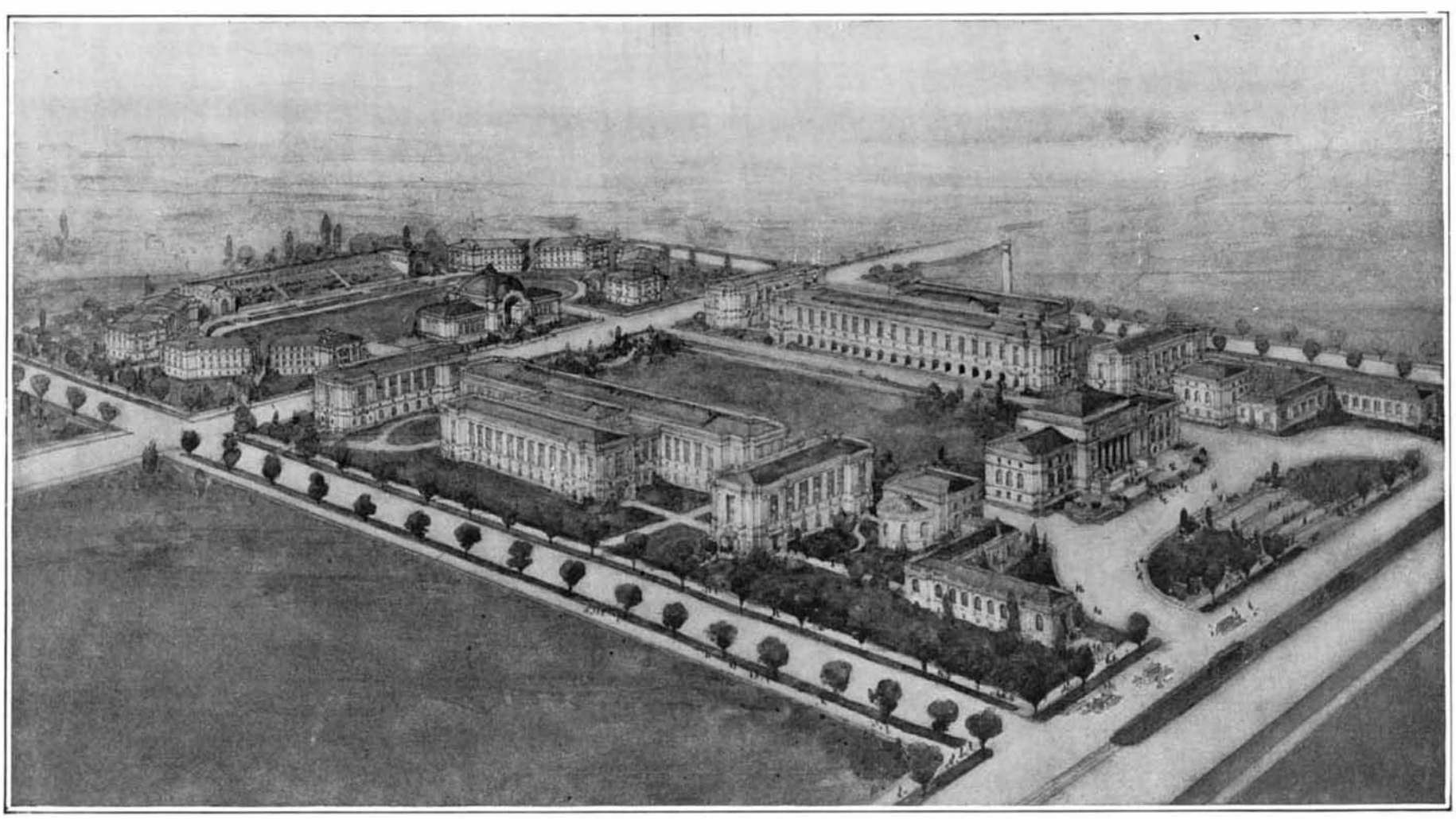

Suggestion for a Group of Technology Buildings made at a time when the inland location seemed possible.

A PRINCELY GIFT FOR TECHNICAL EDUCATION

and thus the flow is toward the longer arm of the siphon. As the water in the shorter arm is pulled up, there is a tendency to produce a vacuum there. The pressure of the air on the water in the pond or reservoir from which the water is being drawn forces the water up into the short arm of the tube, and so the flow is continuous. This you will find explained in all the text-books of elementary physics, such as are used in the high schools.

NEW BOOKS, ETC.

INCREASING HUMAN EFFICIENCY IN BUSINESS. A Contribution to the Psychology of Business. By Walter Dill Scott. New York: The Macmillan Company, 1911. 8vo.; 339 pp. Price, $1.25 net.

The modern business man, Prof. Scott reminds us, is the true heir of the old magicians; his touch increases the value of things tenfold. The selection and handling of men is a factor of prime importance in any industry. By judicious application of the laws of psychology, great increase in individual efficiency is brought about. "We have a choice between wearing out and rusting out. Most of us have unwittingly chosen the rusting process." We cannot wholly accept this statement, but we must admit that another tenet of the writer's is indisputable—that many confuse overwork with what is really underwork accompanied by worry or unhygienic practices. Prof. Scott advocates spurring the worker to greater effort by a studied use of the good example, the competitive spirit, increased remuneration, and assured concentration, and declares it possible by these means to increase the average efficiency fifty per cent. We may demur before the sweep of some of the writer's arguments and conclusions, but we must admit the suggestive power of the work, which is wonderfully well written and makes fascinating reading.

THE DESIGN OF WALLS, BINS AND GRAIN ELEVATORS. By Milo S. Ketchum, C.E. New York: McGraw-Hill Book Company, 1911. 8vo.; 556 pp.; illustrated. Price, $4 net.

This is a second edition containing one hundred and fifty pages of new material. Retaining-wall design has been the subject of much diverse speculation and theory. The solutions of Rankin and Coulomb are presented in separate chapters, with full diagrammatic demonstrations. Cain's formulas and Trautwine's rules are also given. In the second main division of the work the design of coal and ore bins is considered, with foundation and elevation plans of the bunkers and bins of the Lackawanna Steel Company. Part III takes up the design of grain bins and elevators. As reinforced concrete has come into quite general use for retaining walls, bins, and elevators, considerable space is devoted to the theory and formulas governing this method of construction. In fact, concrete, both plain and reinforced, forms the subject of a lengthy appendix. Other appendices give definitions of masonry terms, specifications for stone masonry, and specifications for steel structures. The work is a very thorough exposition of an important branch of building science.

THE WIDTH AND ARRANGEMENT OF STREETS. A Study in Town Planning. By Charles Mulford Robinson. New York: The Engineering News Publishing Company, 1911. 8vo.; 199 pp.; illustrated. Price, $2 net.

The author has been a close student of Town Planning, and has had exceptional facilities for observation and the interchange of ideas, both here and in Europe. He is not an illogical extremist, either from the artistic or the utilitarian point of view; he does not, for example, unqualifiedly endorse the standardization of thoroughfares. Private interest has been given its share of consideration together with public welfare. The problem of transportation is treated with the respect due to its gravity. In short, the writer seems to have overlooked few of the factors necessary to the wise planning and artistic treatment of the city lay-out.

THE ORIGIN OF LIFE. Being an Account of Experiments with Certain Superheated Saline Solutions in Hermetically Sealed Vessels. By H. Charlton Bastian, M.D., F.R.S. New York: G. P. Putnam's Sons, 1911. 8vo.; 119 pp.; illustrated. Price, $1.50 net.

For many years Prof. Bastian has conducted a systematic research into the origin of living matter. His experiments have been so dependent upon minute attention to detail, and his conclusions so opposed to the generally accepted theories, that the learned societies have hesitated to endorse these experiments and conclusions. In brief, his studies have led him to believe that, far from the life-originating process having occurred only once, in the dim past of the earth's existence, that process is being repeated daily; that is, he is an ardent believer in, and exponent of, so-called "spontaneous generation." Prof. Bastian meets with vigorous argument the suggestion that the bacteria found in his experimental tubes are dead organisms, previously contained in the fluid and destroyed by subsequent heat. He declares these "dead" organisms grow and multiply. His earnest aim is to induce scientists to repeat his experiments, so that his conclusions may be vindicated. Because it is as yet uncorroborated Bastian's work cannot be accepted by scientific men. The reason was given editorially in last week's SCIENTIFIC AMERICAN.

A Princely Gift for Technical Education

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bankment, an educational plant truly unique. It is possible now to develop from the beginning a harmonious plan which shall be based on the experiences of half a century of successful technical instruction. Such plans have of course been considered in a tentative way at different times since it has seemed possible for the Institute to move from its present place in the heart of Boston. Two of the suggestions are here presented. One of them was drawn at the time when an inland location seemed possible, grouping the larger departments about a campus with an administration building for the front, the power plant entirely at one side, and the athletic grounds, symmetrically surrounded by society houses and dormitories. These suggestions as to buildings are approximately correct with reference to floor space, but of course in another location would be necessarily much modified in arrangements. The pen and ink sketch which is presented is an architect's conception of the possibilities of the Charles River embankment site. It is the general development of a suggestion made by Prof. Despradelle of the Architectural Department of the Institute, who a number of years ago at the request of a large owner of property here, prepared a sketch which has been modified and extended to accord in a way with the location now selected. While this cannot be considered in any way authoritative it does show the splendid opportunities that this site will present for the erection of a harmonious and dignified group of educational buildings. It will then be seen that for the Institute of Technology the gift means the possibility of supplementing the splendid location by a plant and equipment second to none of the kind in the world.

When the Royal Canadian Commission on Industrial Technical Education visited Boston only three months ago, a group of men better fitted than any other in this world by their recent experience for an opinion that is worth having, the members inspected the Institute of Technology. They expressed the highest opinion of its efficiency. "We think no school in the world is ahead of it," said Dr. Bryce of this Commission. "The people of Boston and its own graduates may well feel proud. Some schools have better buildings, but no other one seems to have teachers so well adapted to the work." "It astonishes us," said another commissioner, "to find such marvelous equipment in such plain factory buildings." The anonymous gift will afford to the Institute the means for remedying a part of this criticism, and for establishing its present superior equipment in conditions of more ample space, in which its value may be even greater.

What this gift means for the world is an exceedingly important consideration. It evidences in the first place what has already been set forth in the SCIENTIFIC AMERICAN that the business world is aware of the need of technically trained men. It is not necessary here to repeat the story of Dr. Maclaurin in his recent tour through the West where at alumni dinners in Philadelphia, Washington, Chicago, Minneapolis, Pittsburgh, and Rochester, the strong commercial men met him and expressed to him their conviction that technical education is the education for the future large business man. Such instruction can be secured only in institutions especially fitted for this work, and the present gift is the most convincing evidence of the existence of this opinion.

When the business man in touch with large affairs is ready to give so much of his money to a technical institution it is the highest evidence of the belief of the business world in the value of technical education. The truth is that technical training is coming into its own. It is the most recent important development of education, the whole history of which in this, or indeed in any other country, lies within the past half-century. For the world the gift to Technology is important, for it is but the beginning of support by business men of the educational institutions which train their students to be "usable," and makes of them important factors toward the improvement of business.

In his conversations with President Maclaurin the donor shows that he is looking at the question of future education from the strictly business point of view. He believes that in this country we are only just beginning to realize the possibilities open to us through modern methods of business efficiency and the use of specially trained experts. It is only the fringes of possibility that have thus far been touched, and he says through proper methods there must arise developments that will be simply astounding. And he, the modest giver, is a type of the business man of large outlook, for which the country is famous.

And now, in closing, a few words about what the Institute of Technology is proposing to do. Of course every one is agog and is asking, when the new buildings will be erected? The establishment of a great group of school buildings is not a matter to be done offhand, like ordering a suit of clothes from the tailor. It is a work that requires time and consideration. The Institute has now the opportunity to build harmoniously and consistently, and this will be done with the greatest possible preparation for the future. All the circumstances are unusual, the site, the financial support and the importance of the school, and for that reason the manner of procedure is unusual. For a year the instructing staff has been at work, each group with the needs of its own department. Computations have been made as to room required and consideration has been given to the best disposition of the rooms. The instructors have been sent to other institutions to observe what in them there might be of the practical and efficient. Thus all the facts are to be gathered that may prove of importance to the new plant. Then there are the engineering problems to consider, and in an area of fifty acres, with the inter-relations of buildings and other constructions, grounds and undergrounds, there will be many of them. Toward the solution of these, John R. Freeman of Providence, one of the country's leading engineers has volunteered his services for a number of months the coming season. Then when educational and engineering problems have been pretty well considered, the architects will begin their work. By this method whatever of beauty in the architecture the specialists may be able to secure, the buildings and the land will be fundamentally prepared for their ultimate purposes.

All these things will require time. The New Technology will be no Aladdin's palace to spring up in the twinkling of an eye, but at the same time it will contain the lamp of enlightenment that is greater than that of the Chinese youth, for by constant rubbing it will illuminate and better the whole human race.

The Heavens in April

(*Concluded from page 290.*)

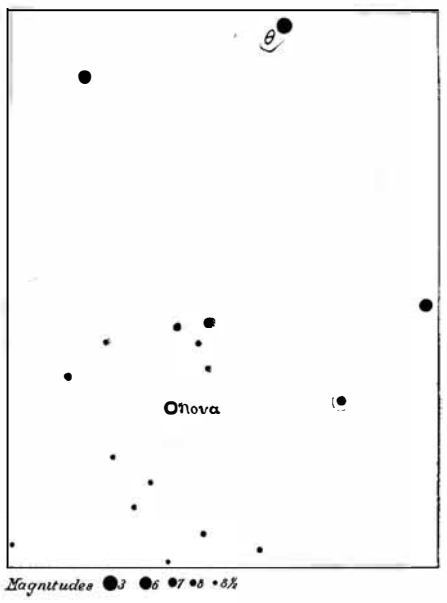
has been prepared. The three bright stars at the top are visible to the naked eye and are shown on the larger map, the brightest being Theta Geminorum. Those of the seventh magnitude can be seen with an opera-glass, those of the eighth with a field-glass of fair power, while the stars of magnitude 8½ will require a powerful field-glass or a small telescope. There is nothing as bright as magnitude 9.5 between the Nova and the groups of stars above and below it, so that this chart will suffice for its identification until its brightness falls below this limit.

The spectrum of this interesting object has of course been carefully observed. Photographs taken at Harvard on March 13th showed a spectrum closely resembling that of Procyon, with dark hydrogen lines. On the following night a marked change had occurred, the hydrogen lines being bright on the edge toward the red, so that the spectrum closely resembled that of other new stars which had previously been observed. Photographs taken on the 13th at Ann Arbor showed the same bright lines. Prof. Pickering explains the apparent discrepancy by suggesting that the bright lines may at that time have been too narrow to show on the Harvard photographs which were taken with an instrument (objective prism) of quite different type from the slit spectroscope used at Ann Arbor.

In any case it is clear that there will be preserved in this case a good record of the early stages in that remarkable series of changes which the spectra of new stars present. It may be recalled that Nova Persei, of 1901, the only other new star discovered while still increasing in brightness, also showed a dark-line spectrum on the first day, which however resembled that of the typical stars in Orion, and not that of Procyon.

The probable theoretical explanation of the phenomena of new stars has already been discussed in these columns, in connection with Nova Persei and the previous Nova Geminorum of 1903.

The most satisfactory theory so far proposed seems to be Seeligus's, according to which the remarkable increase in luminosity of the star is due to its collision with a nebula, i. e., a cloud of meteorites, or cosmic dust, with perhaps more or less gas accompanying them. Such an encounter would bring about the fall of great quantities of meteoric material upon the star's surface, with enormous velocity, due principally to the attraction of the star itself. These particles, striking the star's atmosphere, would become incandescent, being heated by friction just as meteors are on entering the earth's atmosphere, but to a far higher degree. If the meteoric material was comparable in quantity with the mass of the star's atmosphere, the whole surface of the star would be heated to an exceedingly high temperature. At the same time violent currents would be set up in the atmosphere, which might explain the great displacement and complexity of the spectral lines. When once the star passed out of the dust cloud, its surface would receive no fresh supply of heat, and would very



Enlarged view of the region about Enebo's Nova.

rapidly cool. The influence of the whole encounter upon the star, though enormous at the surface, would be only skin-deep, which accounts for the fact that these new stars, after only a few years, return to their original brightness, or nearly so.

The theory thus sketched, though in the main very satisfactory, does not explain some things, notably the fact that Nova Persei, and now the present Nova, when caught "on the rise" showed a spectrum closely resembling that of an ordinary star. It may be hoped that the observations in this present case will help to clear up this difficulty.

With regard to the distance and real brightness of the Nova, we can only judge by analogy with those previously observed, which have in all the cases investigated been found to be beyond the range of exact measurement, and certainly not less than 100 light-years from the sun. If the present Nova is at this distance, it must at maximum have been not less than forty times as bright as the sun, and this is likely to be far too low an estimate.

Princeton University Observatory.

The World's Fleets—Enormous Increases

IT is a noteworthy fact, and one that does not appear to have received its proper measure of attention yet in this country, that at the present moment the principal nations of the world are about to embark, or have already begun work upon, naval programmes of almost unprecedented magnitude. By a curious coincidence this potent fact synchronizes with