great stimulus of the inventor and of the promoter of new improvements is repressed. The conclusion of the writer of the paper referred to is: "The most effective method of afflicting any department of applied science with creeping paralysis is to constitute it a government monopoly."

While the State electricians would probably declare that they are 'ever on the outlook for new things,' the record is shown to invalidate that claim, at least to the extent of showing that the new things have come vastly more certainly and promptly to the private management. Inventions have been extensively exploited by private means and private companies far in advance of any governmental action, and the inventor proverbially dreads the necessity of going with his plans to a governmental department in all countries and whatever his field of work. Even the inventor of the apparatus of war has his bitter experiences with the official, and the history of the work of Maxim and of Broadwell still earlier, among our own great inventors, may be added to the examples quoted by Fleming, of Morse, of Trowbridge, of Marconi and others. Government officials do not always cordially and sincerely strike hands with the inventor, even where competent to appreciate his work, and it is too often the fact that they prefer to hold him at arm's length until one of their own caste or a partner in invention can find ways of evading his claims and of reaping the harvest he has sown.

"The State officials guard a monopoly. It is in their power to take or reject improvements. They set the pace in one large department of electrical invention and it cannot be forced." As Mr. Edison said to Professor Fleming when the latter explained the nature of these governmental impediments of progress in electrical development: 'Why! They've throttled it!'

In electric traction the same difficulties are interposed, in appropriate ways, by the official brakesmen. Great Britain has to-day about 400 miles of track; the United States has 12,000 or more. In that country any local government may take away the property of any tramway within its limits, at the appraised value of its real property, after twenty years of service. This provision of law has crippled the enterprise. 'To tell an investor in tramway stocks that, after passing through a long non dividend-paying period, he has then the prospect of having his property taken from him at a breaking-up price, and perhaps half his property confiscated,' is to warn him not to invest. Thus the business languishes and the builder of even the comparatively promising railways about London must come to the United States for all his material and machinery.

Scientific education is looked upon as one element of the needed radical reform. But "What is required is not abundant mediocrity, but a fully sufficient opportunity of training those who will be captains of industry. The persons who need technical education are the masters much more than the men."

Throughout the whole article, of which we have here presented so extended an abstract, the evidence is strong that the dangers of that amateurism and of that officialism which are now beginning to awaken intelligent men, and especially men of science and men of applied science in the United States, to serious apprehension relative to all public services involving scientific work or development, have secured a firm and dangerous hold in Great Britain and constitute undoubtedly one of the elements of that apparent relative retrogression in the industries which has of late attracted so much attention and awakened such earnest discussion in the scientific and technical journals, and even to some degree in the columns of the 'Thunderer' itself. The republication, by the Harpers,* of letters to *The Times* from a British engineer visiting the United States, furnishes and preserves an interesting and instructive commentary upon these facts.

R. H. THURSTON.

MUSEUM METHODS ABROAD.

THE appearance of the eleventh annual report of the Museums Association, of Great Britain, reminds one that it is as nearly as possible eleven years ago that the Association of American Naturalists decided that so far as museums were concerned nothing remained for

* 'American Engineering Competition.' New York and London, Harper and Brothers. 1901. 8vo. Pp. 139.

it to do. The present report consists of xxiv + 157 pages, a trifle larger than the average of the reports, and besides the matter pertaining solely to the workings of the Association, comprises the address of the president, Dr. Henry Woodward, twelve papers, general notes, museum reports and a list of museum publications. Dr. Woodward's address is practically a brief review of the relations of the British Museum to the public and what it has done in the way of the arrangement and display of specimens to interest and instruct visitors, particular attention naturally being given to the display of paleontological material. Dr. Woodward has come to the same conclusion as that expressed by the writer some years ago in SCIENCE, that the complete mixture of recent and fossil animals in the exhibition series is inadvisable and the best results are to be obtained by introducing a few carefully selected and typical examples of living animals into the series of fossils, and rounding out the display of recent animals by the introduction into the exhibition series of a few fossils. "This limited introduction of existing forms, aided by diagrams, drawings and separate parts, does not break up the arrangement of the collection (of fossils) as a whole, but vastly enhances its usefulness to the student."

The aims and arrangement of various museums are described in more or less detail in several papers, including the Hastings Museum, Worcester, by W. Edwards; the Horniman Museum, London, by Richard Quick, and the Norwich Castle Museum, by Henry Woodward.

W. M. Flinders Petrie discusses the question of a 'National Repository for Science and Art,' advocating the acquisition of about a square mile of land within an hour of London (the scheme naturally applies to all large collections) on which should be built a series of one-storied galleries lighted from above; these galleries to be 54 feet wide and about 400 feet apart. The object to be attained by this method is to provide ample room, at a moderate cost, for the housing of material which would be at once preserved and available for study, museums in large cities whose cost of maintenance is high being largely devoted to exhibition.

F. A. Bather described a series of 'Exhibition Labels for Blastoidea,' specially intended for the student who goes to a museum with a definite purpose of acquiring information regarding fossil crinoids. Incidentally we are given a suggestion for a dichotomous arrangement of a museum. The text of the 44 labels is given and they practically amount to a condensed text-book with the specimens serving as illustrations. No one will deny the value of such a system to the student, but would an entire museum thus planned and labeled appeal to the general public, for which, after all, the exhibition portion of a museum is intended?

The 'Reproduction of Art Objects' is treated by Robert F. Martin, who notes that Venetian glass, old majolica, bookbindings, bronzes and even tapestries are now successfully duplicated, so that art museums may by the use of these reproductions fill gaps in historical series for a comparatively small price, where originals would either cost large sums, or be quite unobtainable.

J. W. Carr explained the use of 'Photography in Museum Work' for illustrating features which could not be adequately represented by specimens alone. Among such he instanced various geological phenomena; the habits and habitat of animals; forest trees and the general facies of the landscape caused by differences in the flora.

At the business meeting of the association the question of publishing a monthly journal devoted to museum matters was the subject of a 'Report from the Council,' and while the project was not then definitely settled, it has since been decided to publish such a periodical. The details have not as yet been made public.

F. A. L.

THE SCIENTIFIC ALLIANCE OF NEW YORK.

RENEWED efforts are being made to secure an adequate building for the societies composing the Scientific Alliance of New York. Mr. J. Pierpont Morgan has made a conditional subscription of $25,000, and several smaller amounts have been subscribed. A Committee of Cooperation with the Council of the Alliance has been formed consisting of Andrew H. Green, *Chairman*, 214 Broadway, Edward D. Adams, Abram S. Hewitt, W. E. Dodge, John S. Kennedy, Andrew Carnegie, F. W. Defoe, J. Hamp-