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THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 364,

For the Week ending December 23, 1882.

Price 10 cents. For sale by all newsdealers.

NATIONAL EXPOSITION OF RAILWAY APPLIANCES.

The Board of Commissioners of the proposed national exposition of railway appliances have issued a circular announcing that they have secured for the purposes of the exhibition the Inter-State Exposition buildings, in Chicago; and that their intention is to hold the exhibition during June and the fore part of July, 1883. A large guarantee fund has already been raised in Chicago.

The buildings named are said to be the largest of the kind in the country. The main building is 800 feet by 200 feet. It has a capacious gallery one-third of a mile long, and is provided with an abundance of steam power for operating machinery. Railway tracks will be laid the entire length of the building for the accommodation of locomotives and cars and for use in making tests.

The Board announce also that a series of scientific and practical tests, to be made by well-known scientists and carefully selected committees, extending to every article and every description of material susceptible of reliable test, will constitute one of the most interesting as well as most valuable features of the exposition. An official record of these tests and of every exhibit, including a list of prizes awarded, will be made and published under direction of the Commissioners.

Applications for space should be made early to the Secretary, Mr. E. H. Talbott, Grand Pacific Hotel, Chicago, Ill. The other officers of the Commission are: Hon. Lucius Fairchild, ex-Governor of Wisconsin; Vice Presidents: Geo. M. Pullman, President Pullman's Palace Car Co., Chicago, and Aaron French, Pittsburg Car Spring Co., Pittsburg; Treasurers: J. McGregor Adams, Adams & Westlake Mfg. Co., Chicago.

The rest of the Commission comprises: E. V. Cherry, Vice-President Post & Co., Railway Supplies, Cincinnati; A. G. Darwin, President Allen Paper Car Wheel Co., New York; O. W. Potter, President North Chicago Rolling Mill Co., Chicago; H. E. Sargent, late General Manager Northern Pacific R. R., Chicago; James McMillan, President Michigan Car Co., etc., Detroit; Geo. Westinghouse, Jr., President Westinghouse Air Brake Co., etc., Pittsburg; J. H. Bass, proprietor Bass's Car Wheel Works, Fort Wayne; E. H. Williams, Baldwin Locomotive Works, Philadelphia; Wm. S. Eaton, National Tube Works Co., etc., Boston; Wm. Chisholm, President Cleveland Rolling Mill Co., etc., Cleveland; Thomas M. Carnegie, President Edgar Thomson Steel Co., etc., Pittsburg; W. H. Dosne, President J. A. Fay & Co., Wood Working Machinery, Cincinnati; M. M. Buck, Railway Supplies, St. Louis; C. W. Rogers, Vice-President Montgomery Stock Car Co., etc., New York; John E. Green, Vice-President Louisville Railway Supply Co., Louisville; H. Clay Evans, Vice-President and General Manager Roane Iron Co., Chattanooga; C. D. Peters, Railway Supplies, London, England. Under such direction, the failure of the enterprise is an impossibility.

PROPOSED PATENT LAWS FOR JAPAN.

Another proof of the capacity of the Japanese to appreciate the conditions of success in the competition of modern nations for place and power, is seen in the favor with which inventions are regarded there. While their nearest neighbors, the Chinese, discourage the introduction of novel devices as undesirable disturbances of the established order of things, the Japanese recognize that they must bring their national industries up to the level of those of the countries of the West, by the introduction of foreign inventions and the development of home ingenuity, or else they must fall out of the race entirely. Accordingly a system of patent laws is proposed, but a serious difficulty is encountered in deciding what their scope should be to secure the greatest advantage to Japan.

It is argued that, because of the backward state of the art in Japan, it will not do to make originality or novelty a condition in granting patents. Multitudes of useful inventions, which from lapse of time have become common property in patent giving countries, are needed in Japan, but they are not likely to be introduced unless some one has an exclusive interest in importing them. Accordingly, it is proposed to grant patents to any person, native or alien, who will introduce any mechanical or other invention calculated to develop Japanese resources. The patentee need not be the inventor, nor is it necessary that the invention be of recent date, provided it be new in Japan, and calculated to be beneficial.

There is a basis of shrewd policy in this, but great care will have to be used in draughting the proposed law, or it will prove the reverse of advantageous to the country. The monopoly granted will have to be limited to the specific device patented and introduced, or else the patentee may gain by the introduction of a single fundamental invention the control of a vast range of later improvements and adaptations, which power may be exercised adversely to the general good in preventing competition and hindering national development in the arts.

Touching the policy of disregarding the inventor, and giving every right to the introducer, it is held that, inasmuch as foreign inventors have never enjoyed any rights under letters patent in Japan, the proposed law cannot be said to take anything from them. It would be a better as well as juster policy, however, to give the inventor a degree of precedence, and allow him a reasonable time to decide whether he wishes to acquire the control of his invention in Japan by means of letters patent. Failure to do this might be taken as evidence of a voluntary surrender of his privilege, whereupon the introducer might set up his claim.

It is further proposed to make provision for the establishment of bureaus of observation in America and Europe, where experienced agents shall be on the watch to discover what inventions and appliances are calculated to meet the needs of Japan, with authority to secure and forward them. If the selected agents are shrewd and capable students of Western arts, and well acquainted with the needs and capacities of their country and countrymen, they may render valuable services for a time, but in a little while individual enterprise may be trusted to do the required work much more effectively.

THE STRUCTURE OF THE CASCADE MOUNTAINS.

The alleged slipping of the basaltic mountain toward the Columbia River, at the point where the river cuts through the Cascade Range, has been attributed to the slope of the underlying sandstone. It is more probable that the slip is upon one or both of the pasty conglomerate beds above and below the sandrock. The structure of the mountain has been studied by Professor J. Le Conte, whose description is quoted as below in the lately published report of Lieutenant Symonds' examination of the Upper Columbia River.

There is found: 1. Along the water's edge, and for about fifteen feet upward, a very coarse conglomerate of rounded porphyritic pebbles and bowlders of all sizes up to five or six feet in diameter, cohering by an imperfectly lithified earthy paste.

2. Above this conglomerate is a very distinct, irregular old ground surface bed, in which are found silicified stumps, with their roots spreading out over twenty feet in diameter, penetrating into the bowlder material beneath, and evidently *in situ*. This is undoubtedly an old forest ground surface.

3. Resting directly in this ground surface, and therefore inclosing the erect stumps, is a layer of stratified sandstone, two or three feet thick, filled with beautiful impressions of leaves of several kinds of forest trees, about whose silicified bases they are found. This layer is not continuous, like the ground surface on which it rests.

4. Above this stratified leaf bearing layer rests a coarse conglomerate similar to that beneath at the water level. Scattered about in the lower part of the upper conglomerate and in the stratified sandstone, and sometimes lying in the dirt bed beneath it, are fragments of trunks and branches of oaks and conifers, in a silicified or lignitized condition. They are evidently silicified driftwood.

5. Above this last conglomerate, and resting upon it, rise the layers of lava, mostly columnar basalt, one above another to the height of more than 3,000 feet.

The history of these formations Professor Le Conte reads as follows:

1. The region of the Columbia River was a forest, probably a valley overgrown by conifers and oaks. The subsoil of this forest was a coarse bowlder drift produced by erosion from older rocks.

2. By excess of water, either by floods or changes of level, the trees were killed, and their leaves shed and buried in the mud, and their trunks rotted to stumps.

3. Tumultuous and rapid deposit of coarse drift containing driftwood covered up the forest ground and the still remaining stumps, one hundred, perhaps several hundred, feet in thickness.

4. The surface thus formed was eroded into hills and dales.

5. Then followed the outburst of lava in successive flows, perhaps for a long period of time, and the silicification of the wood and the cementation of the drift by the percolation of hot alkaline waters containing silica, as happens so commonly in sub-lava drifts.

6. Finally followed the process of erosion by which the present stream channels, whether main or tributary, have been cut to their enormous depth.

The outflow of lava which forms the bulk of the mountain was probably the grandest and most extraordinary lava flow that ever took place. It covered an area of about 200,000 square miles to an average depth of something like 2,000 feet. Its greatest depth was not less than 3,700 feet.

To Mail Subscribers.—A Gratuitous Number.

The day of publication falling one day earlier each calender year has gradually antedated the issue of the SCIENTIFIC AMERICAN and SCIENTIFIC AMERICAN SUPPLEMENT, so that in regular order the first number of the coming volume would naturally issue on Saturday, December 30.

To avoid the beginning of the new volume before the commencement of the new year, we have decided to give our mail subscribers the benefit of an extra number.

Instead, therefore, of stopping the SCIENTIFIC AMERICAN with issue No. 26, and the SUPPLEMENT with No. 364, which would give the subscriber fifty-two numbers for the year, we shall, at considerable cost, mail to him a fifty-third number. We hope our mail subscribers will recognize our liberality in presenting them with an extra paper, and favor us with a prompt renewal of their subscription. And if any one can influence a friend to join him, who does not know the value of our publications, it will be a good thing for both his friend and the publishers. For terms for the SCIENTIFIC AMERICAN and SCIENTIFIC AMERICAN SUPPLEMENT for 1883, see prospectus.