Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

☞ "The American News Company," Agents, 121 Nassau street, New York.
☞ "The New York News Company," 8 Spruce street.
☞ A. Asher & Co., 20 Unter den Linden, Berlin, are Agents for the German States.
☞ Trubner & Co., 60 Paternoster Row London, are also Agents to receive subscriptions.
☞ Messrs. Sampson, Low, Son & Marston, Booksellers, Crown Building 188 Fleet street, London, are the Agents to receive European subscriptions or advertisements for the SCIENTIFIC AMERICAN. Orders sent to them will be promptly attended to.

VOL. XIX., No. 22... [NEW SERIES.].... *Twenty-third Year.*

NEW YORK, WEDNESDAY, NOVEMBER 25, 1868.

Contents:

(Illustrated articles are marked with an asterisk.)

DURING the past twenty years, in round numbers, fifty thousand alleged new inventions have been submitted to MUNN & Co. for examination, thirty thousand applications for patents have been prepared, and twenty thousand preliminary examinations at the Patent Office have been made into the novelty of alleged new inventions. The value of this Agency is more fully set forth in the announcement in the advertising columns.

OUR STATE CANALS.—ENGINEERING SUGGESTIONS.

From the Annual Report of the State Engineer, recently published, for the year 1867, we make the following deductions:

The total amount of work done under the Engineer Department (Hon. J. P. Goodsell, being late State Engineer), is $1,413,463 60, on which the cost of Engineering is 5.7-10 per cent.

The total length of navigable canals and feeders is 893·70 miles, unnavigable feeders 5·68 miles, Chenango Canal Extension about 97 miles, or 996·38 miles in all.

The usual complaints of deficient supply of water are noted in August and September, on the Syracuse Level of the Erie Canal, and the possible advantage of a pumping supply from Oneida Lake is mentioned; the distance being 3¼ miles and the lift 63 feet. In connection with this question, remedies are discussed as to the restriction of the boat models and their tunnage; the use of steam towing power at certain locks; and the construction of additional locks at Port Byron and Syracuse. A canal telegraph is also recommended, and the gradual substitution of iron for wooden bridges.

The proper appropriations for the Chenango Canal Extension, for which $825,000 have been formerly allotted and $1,671,529 are required, are advised, and the advantages of this route explained.

The Report, among other interesting details, contains the Report in full, with a map, of the surveys made in 1866, by Samuel McElroy, C. E., for the improvement of the Hudson River, for slack water navigation from Troy to Fort Edward, about 40 miles, and a corresponding improvement of the Champlain Canal from Fort Edward to Lake Champlain, about 25 miles, with locks 225 feet by 30½ feet, adapted to 8 feet water way; and also the comparative cost of improving the Champlain Canal from Troy to Whitehall, with locks 225 feet by 25, and 7 feet water way.

This survey was made by triangulation from intermediate base lines, on the entire River Division, and all the hydrographic notes were taken in a similar way. The convenience and accuracy of this method are demonstrated by a resultant error in measurement of distance of about 1¼ feet on 40 miles survey, along a winding river, with wooded banks and numerous rifts and islands; by obtaining over 400 lines of soundings, independent of any river fluctuations; by locating the adjacent canal, property lines, streams, buildings, proposed structures, etc., between June and December, with a light field party, and at an aggregate cost of about $7,500 for the entire survey. Notes were also taken to determine the propriety of changes of canal line and level, and a reduction of the locks.

The Report discusses the Topography of the Hudson and Champlain Valley, New York Harbor Improvement, River Improvements below Troy Dam, Sketch of the Upper Hudson, Survey Extension for Flood Relief, Sketch of the Champlain Canal, General argument for Improvement, Plans and Estimates.

From this discussion it appears that a dam at the highlands on the Hudson, 150 feet high, would turn the stream into Lake Champlain and the St. Lawrence; that the remedy which New York Harbor really needs for the difficulties of navigation at Hell Gate, from the swift tidal currents, at Fulton Ferry from the winter ice-fields and tides, at the New York slips from immense deposits of silt, at Sandy Hook from a narrow, shifting, and shallow channel, would be found, by connecting New York and Brooklyn with a masonry dyke, about 400 feet wide, with two or more ship locks, and by making a ship canal of the Harlem River, so that the whole volume of the North River could go out to sea, and the present tidal flux and reflux be prevented on the East River, and the facilities of Sound and River Commerce be turned into their legitimate and natural channel at the head of New York Island: this would also solve effectually the problem of connecting New York and Brooklyn.

It is also proposed to examine the gorges of the Hudson River above Fort Edward, to determine the feasibility of a plan for retaining the freshet supplies, so as to prevent the periodical floods which have always proved so destructive below and above Albany.

The details of the Report show that on a comparison of the items of cost, the sum of $4,534, 379 will secure 8 feet water way, by the River Plan, from Troy to Whitehall, while it will cost $5,866,851 to secure 7 feet water-way, by the Canal Plan, and that the "Commercial, Military, and Mechanical advantages are distintly in favor of the River Plan;" the value of the developed mill power alone, being shown to be about $4,334,600.

The suggestions contained in this Report, furnished by an Engineer thoroughly qualified to make them, merit the consideration of all who are interested in the commercial development of our State and our City, and it is to be hoped that at no distant day they will have a practical illustration.

A NATIONAL INVENTION BUREAU.

Although we are taught to look upon Washington as the central and national city, it does not bear to the nation any such relation as London bears to the British Empire, or Paris to France. It is merely, and only, the governmental center of the nation; in no wise its principal or important metropolis. It was destroyed in the war of 1812–15 by an inconsiderable force of English troops, but its destruction did not affect the result of the struggle nor seriously move the minds of the defenders of the country.

In our late war, the danger of the conquest and occupation of Washington, so far as it might be detrimental to the ultimate success of the national government, and give the enemy a *point d' appui*, was not so much a motive for the unexampled rallying to its defence, as a national pride in the preservation of the political capital of the nation; but Washington became, from this cause, the center upon which all patriotic eyes were fixed; for all felt that the reduction and occupation of our nominal capital by the army of the insurrectionary States, would not only belittle us as a nation, in the eyes of the world, but dishearten those who looked upon it as really the political center of the country. Since then it has attained a notoriety to which neither its situation, its value as a commercial or manufacturing center, or even its being the depository of the national archives and the seat of government, entitles it.

The splendid national buildings—the Capitol, the Treasury, the Post Office, and the Patent Office—being costly and beautiful structures, built by the money of the people of the whole country, are its chief titles to respect; and among them all the Patent Office building is the one, the loss of which would be most severely felt by the people. Their national pride might be wounded and their personal purses affected by the destruction of the other public edifices which are used for the transaction of the national business; but the destruction of the Patent Office, with its store of the inventive talent of more than half a century, might be a national disaster, the results of which would be felt for a generation. Its cabinets contain thousands of models of inventions, which are exceedingly valuable as references, not only to the force of the Patent Office Department, but to thousands of our inventors and mechanics, although, in this respect, it may not be instructive to them than a museum of natural history to the "live" student of that science.

What we need is at least one national collection of new inventions, where the machines or devices are not labeled and filed away in glass cabinets, but are exhibited in operation, so that "he who runs may read." This can hardly be done by private enterprise, but should be the result of association; such an association as would demand and secure the confidence of manufacturers, mechanics, inventors, and others interested. The American Institute is the proper body to establish such a bureau in this, the commercial metropolis of the country. That it can be done without governmental aid, National or State, is evident to one who has the means of forming an opinion. That it would be self-sustaining, and even profitable, there can be little doubt. Every exhibitor to this perpetual fair would willingly pay an entrance fee for his invention, and a rent for space allotted to him, and for power employed. He could well afford it, as the action of his machinery, governed by his agent, who should be competent to explain its operation and advantages, would be a perpetual advertisement, more powerful than columns in a daily or weekly journal.

Beside this, the products, or a certain percentage of them, might be claimed by the Association, and thus another source of revenue to the enterprise be opened. Of course, such an establishment would become one of the "lions" of the city. Everybody who visited New York would think their visit to have failed of its intent if they did not see the contents of the Mechanics and Inventors' Museum.

As it is now, the barrooms or offices of some of our hotels are used as show rooms for the devices of inventors, to the annoyance of guests and the inconvenience of proprietor and employés.

Strangers with machines, which require power and material to exhibit their excellences or prove their advantages, are compelled to travel about town and locate their inventions in places hard to find and uncomfortable to visit.

A central and well-known institution such as we have suggested, we are confident, would "pay" in more senses than one, and would be a worthy adjunct to the present attractions of the city, and as popular a place of visitation as some of more than doubtful reputation so much affected by strangers.

FACILITIES FOR INTERNATIONAL COMMUNICATIONS.

At the present time there are in progress three immense works intended to facilitate the communication of the people of one country with those of another, between whom nature has placed barriers deemed by former generations as boundaries erected by the Almighty which it were almost impious to attempt to pass. We refer to the Mont Cenis Tunnel, our trans-continental railroad, and the Suez Canal. A few figures in relation to this latter work may not be out of place. It is intended to connect the Mediterranean and the Red Sea, thus uniting the Atlantic and Indian Oceans, and saving the immense detour around the continent of Africa, now necessary to reach the Indies from any portion of Western Europe. The length of the canal will be about ninety miles, having a depth of from twenty to twenty-six feet, and sufficiently wide to accommodate vessels passing each other on the transit from ocean to ocean. The total cost of this canal with the necessary docks, etc., is estimated at $100,000,000. It is evident to the most superficial observer that those who have the management of this great "cut-off" will be able to control the greater portion of the Indian trade—indeed, nearly all the commerce between Europe and India, China, and perhaps Japan.

Our great Pacific Railroad may divest a portion of this lucrative trade, but it must be considered that breaking bulk, re-shipping on cars, and transportation over railroads are costly in comparison with the conveyance of cargoes in ships which can sail uninterruptedly from port to port. The sea is the great highway of the nations; railroads are but supplementary, and we are glad that a movement has been made to connect the Atlantic and Pacific by means of a ship canal across the Isthmus of Darien, a notice of which appeared in in our last issue. It is believed that a canal can be constructed which will pass vessels of large tunnage from one ocean to the other in twenty-four hours. The suggestion is well worthy the consideration of our statesmen and capitalists.

POISONOUS DRUGS AND COSMETICS.

Our attention has been called to this subject by the reports of accidental poisoning, which for a month or so have been numerous. In this and in other cities such accidents are almost of weekly occurence. We scarcely look through our daily exchanges without seeing an account of something of this sort. The whole of it is attributable to "carelessness," according to the reports. First, a physician has written a prescription so that it can scarcely be read—a very frequent occurrence by the way—or has used ambiguous abbreviations; next a druggist has blundered in making up the preparation; and again, the blunder occurs in the family, the dose desired and its selection from the heterogeneous collection of remnants of previous prescriptions, usually kept in a dark corner with the poison for vermin, being intrusted to the highly intelligent and judicious Biddy who presides in the kitchen.

Another class of poisoning of late becoming more and more common, and for which accidental is too mild an adjective, arises from the use of poisonous cosmetics; several cases of which have been recently reported. The most important of these is one occurring in the practice of Dr. L. A. Sayre—lead poisoning from the use of one of the modern preparations for the complexion. The preparation is one in very common use in this country, and its name forms some of the conspicuous advertisments that adorn fences about vacant lots and the street curbstones.

But it is useless to find fault with an evil unless a remedy for it is possible. We have seen that four classes of individuals are in fault: the doctors who prescribe, apothecaries who put up the prescription, the people who take the medicines, and the manufacturers who make and vend the objectionable compounds. Any system of regulations then that will fully correct the evil must embrace each and all of these classes. Doctors should no longer be permitted to write their prescriptions in abbreviated Latin, in so bad a style of penmanship that it could scarcely be read, if it was an invitation to dinner. People who take medicine have some right to judge for themselves, whether the dose presented to their lips is calculated to heal their infirmities, or to send them into eternity by the run. It was only recently that an important error in the renewal of the prescription was detected by a patient of our acquaintance, who, although urged strongly, obstinately refused to use it until it could be revised by her physician. Beside this, all physicians should be obliged to put full directions as to the administration of prescriptions on the prescription itself, in place of the too ordinary words, "use as directed." This would be a check on the druggist, who would thus often be led to discover errors when they occur by his knowledge of the effects which medicines are intended to pro-

© 1868 SCIENTIFIC AMERICAN, INC.