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THE COAST SURVEY.

Those who are familiar with the character of the work performed by the Coast Survey while it was under the direction of Hassler and Bache and Pierce can scarcely help feeling a regret that it has been suffered to fall into its present deplorable condition.

During the administration of these men, the Coast Survey was looked upon as "out of politics," its work conducted on a strictly business and scientific basis, and no officer, whether from the army, navy, or the civil service, could hope to retain his position once incompetency or a lack of diligence became apparent. As a result, the Coast Survey hydrographic charts came to be known for accuracy among navigators the world over; the stranger or the native skipper found it so easy to approach our coast and enter our harbors by their aid that they complained of the laws of compulsory pilotage; and it was an achievement upon which either was justly entitled to pride himself when he discovered a shoal, a ledge, or even a solitary submerged rock not laid down in the Coast Survey charts, or, if there, inaccurately determined. After the death of that noble old man, Prof. Benjamin Pierce, perhaps the greatest mathematician of his time, there was a short interregnum during which the Coast Survey had practically no head; and then came a period of mismanagement, not to use a harsher term, in which politics, for the first time in the history of the Coast Survey, was suffered to exert its malign influences in every branch of the service, when original investigation got no applause and honest industry no reward. This was happily ended by the recent removal of Superintendent Hilgard under serious and, so far as has yet appeared, unrefuted charges.

Curiously enough, the office of Chief of the Coast Survey having been refused by Prof. Agassiz, of Cambridge, son of the late eminent scientist, it was turned over to a subordinate of the Treasury department, who, however estimable a man he may be, is unknown to the scientific world, and, it seems, possesses neither the experience nor the qualifications which are essential to the control and direction of this important work.

Few persons outside of the Coast Survey are aware of the powerful influence which for many years has been working to turn the service over to the departments of War and the Navy—the geodetic work to the one and the hydrographic to the other.

The Engineer Corps of the army, it was urged, was entirely competent to perform the trigonometrical and topographical work, and the sounding out of bays, rivers, and harbors, the locating of shoals and ledges, the observance of tidal phenomena, and the work upon the high seas was alleged to pertain to the proper and professional duties of the navy.

Professors Hassler, Bache, and Pierce succeeded in making out a strong case in opposition to this. They were able to show, with at least sufficient force to convince those who had the power to make the change asked for, that a special training was required to accurately and intelligently perform the work of the Survey, and that those engaged in its conduct should be at least temporarily removed from the influence of "red tapism" and the "circumlocution office," and freed from the restrictions of military discipline.

They showed, by a comparison of work in the field, the difference between that performed by the army and navy officers while with their commands and by these same and other officers while under the direction of the Coast Survey office, in which the superiority of the latter both in quality and quantity was clearly apparent.

But the standard of excellence established by the three noted men whose names have been mentioned it is not easy to maintain; the influence exerted by them in the service itself, and the confidence that was felt in their skill by those without who were interested in its success, none but a very able and experienced and conscientious man could hope to replace.

Once let the old time reputation of the service lessen—it seems now to be on the wane—and its mergence with departments more or less political may be looked upon as likely, if not certain.

RAILWAYS IN CHINA.

Engineers and capitalists have for some time past regarded the Celestial Empire as offering one of the most promising fields for railway enterprises that still remains unoccupied. They have manifested, consequently, a very strong desire to possess it. A dense population and large natural resources give undoubted assurance of success, could the officials who guard the imperial conservatism once be propitiated. But this is an obstacle which the most importunate diplomacy has not yet succeeded in overcoming. If one glances at the later history of China, however, her unwillingness to entertain any foreign propositions, without very careful consideration indeed, can readily be understood. The assertion is constantly being made that the empire is about to throw off her orientalisms, and to become in effect an annex to Europe, as far as the adoption of western civilization and methods can produce such a transformation. But the change has not come, and those familiar with her modes of thought do not re-

gard it as possible until some years have passed. Her contact with western methods has not shown them to be altogether alluring. From experience, the Chinese officials have come to have a positive dread of the "promoters" of foreign enterprises. They have, unfortunately, been taken in so often by irresponsible adventurers that it is quite possible what we have flattered ourselves has been an opening wedge may be in reality another nail in closing the doors against us.

It is hard to predict what their course will be. We have allowed ourselves to regard them as a very slow people; but while their foreign policy has often only negative merits, it shows in many cases a justice and wisdom of which our own country cannot always boast. We are even now in the midst of a dispute with China in regard to the question of indemnity for the deplorable outrages committed against the Chinese laborers in Wyoming and other parts of the West. We cannot blame China, if the settlement of this question determines the treatment of our own countrymen within the borders of her empire. To injustice, or at least retarded justice, we have now added discourtesy. The Chinese minister and his suite on their entrance into our territory are received, not with the courtesy and attention due to their position, and particularly ordered by the State Department, but with unequivocal marks of disrespect and with churlish demands for credentials. These things must all react upon ourselves. We cannot outrage a nation, however conservative, with impunity. China is not vindictive, but she has shown herself to have a good memory.

She will hardly permit Americans to take any part in the development of her resources while such serious grievances remain unanswered. A statement has recently gone the rounds of the newspapers to the effect that several lines of railways had been determined upon, and that the contracts for materials had been placed in America. It is impossible to find out whether the statement is correct or not, but if such contracts have been made, the present antagonistic attitude of our country will be apt to defeat their fulfillment. It is difficult to know just what they are doing in that conservative empire, for it was only a short time ago that a prominent English journal stated authoritatively that the Chinese were about to introduce foreign systems for working their coal mines, and had arranged with a Belgian firm for the importation of machinery and skilled miners. The statement brought forth a communication from a Chinese employe at the Kaiping Mines, near Peking, that such a system had already been in use for three years past, a part of the plant consisting of a tramway from the mine mouth to the nearest canal. There is, consequently, a railway in actual operation at the present time. As the outside world is so unsuccessful in keeping informed about what has already been done, its failure to obtain the secret of what the Government proposes to do in the future is hardly remarkable. It requires, however, more than even the reputed amount of American assurance to believe that China will permit a people who have insulted and assassinated her own citizens to take any part in her contemplated improvements until these wrongs have been redressed.

Economy of Fuel.

There is no question that the application of many mechanical devices to locomotives is calculated to effect a saving in fuel, says the National Car-Builder. Steam is not used so economically that less could not be made to do the work now done by a greater quantity, and there might be many improvements introduced that would reduce the temperature of the gases being passed into the atmosphere. Skill, ingenuity, and perseverance are, however, required to apply the forms of improvement indicated, and great difference of opinion may rationally exist among accomplished mechanical engineers as to the probable effect of structural changes proposed with the view of promoting economy of heat. But there ought to be no room for difference of opinion about the desirability of accomplishing saving, when all the changes to be effected are the introduction of the means of keeping an accurate record of fuel consumed. It is merely a slight change of method to keep the record of fuel consumed and work done by enginemen instead of engines, but the curtailment of waste that results from this change is by no means slight.

There is no line of economy in railway management at the present day that promises results equal to that of stopping the rushing leaks resulting from senseless waste of fuel in locomotive firing. We know of no plan that will stop the leakage so effectually as the introduction of the premium system of coal accounts. Putting on traveling engineers well acquainted with the proper methods of firing and fuel saving might do some good if these engineers would insist on their methods being followed. But it is an excessively difficult matter to get enginemen to change the free and easy style they have been brought up to, and which takes no thought of any higher duty than that of getting over the road comfortably. The proper and only effectual mode of inspiring the enginemen with zeal for fuel saving is to make them pecuniarily interested in its results.