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Contents.

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TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 177,

For the Week ending May 24, 1879.

THE MENTAL REQUIREMENTS OF MODERN ENTERPRISES.

Formerly the art of war, statecraft, the bar, the pulpit, poetry, and philosophy monopolized the brains of mankind. In these professions and pursuits men of superior mental force found expression for their thoughts; and besides these there were few occupations likely to invite or to develop the higher order of minds. The magnitude, complexity, and scientific character of modern material enterprises—commercial, constructive, manufacturing, agricultural, and the like—have well nigh reversed the old state of things. The learned professions, so-called, no longer offer the only nor even the most inviting fields for intellectual effort; nor do they furnish the most effective means of mental development and culture. As an inevitable result, professional men no longer overtop their fellows in intellectual stature. Indeed it is sometimes asserted that the highest order of minds are now drawn to practical affairs, leaving to the professions only those of inferior rank. Relatively this may be largely true; yet it by no means follows that the leading men of to-day in the purely intellectual callings are in any way inferior to the average of their predecessors. They are tried by a higher standard; they are surrounded by non-professional men of a mental stature impossible in former times; and so, although really great, they seem relatively small. Many a soldier, statesman, jurist priest, or writer, vastly famous in his day, owes his historic greatness rather to the littleness of his neighbors than to his own intrinsic nobility.

Speaking of the requirements of modern transportation, Prof. David Swing remarks that men are giving to railways now a mind which travel and carriage could never have thus diverted from learned pursuits when men journeyed on horseback or carried goods in pack saddles. In those days only a few boys who could feed horses, and a few drivers who could flourish a whip, were absorbed by the carrying business. The railway, with the pomp and circumstance of its engines and palace cars, its vast machinery and money power, now attracts and employs men who would have been Pascals and Newtons, and Wesleys and Washingtons a hundred years ago. The external management of the railway has created, he says, the "railway king" of to-day, who had and could have had no counterpart in the days of the pack-horse; and as a consequence we must admit that "the steam car diverts great brains, and places upon the railway throne men who would once have been princes in statesmanship, or literature, or religion."

"Of course," remarks Professor Swing, "to this statement the objection is ready that perhaps the railway is making men of large brains out of those who would have been only teamsters in the mountains or sleepy drivers along a canal. This objection is indeed valid; but after you have estimated it at its full worth, the feeling will yet remain that many of the modern material pursuits are so immense and attractive, that they are actually drawing away a brain power which in other circumstances might have found its way into the field of high statesmanship, or high thought, or into a broad and powerful pulpit."

The underlying sentiment of this complaint seems to be a vague and unreasonable fear that just so far as practical affairs call for and develop mental force and a high quality of thinking, statesmanship and philosophy and religion, and all the other purely intellectual pursuits, will be robbed of their supply of superior men. If the mental force of the race were a fixed quantity, and every great mind employed upon invention or transportation or other material pursuit must of necessity be diverted from statecraft, philosophy, or literature, there might be some ground for complaint—provided it were certain that invention and productive industry were less beneficial to the race than a correspondingly high order of closet thinking. But the mental force of a people is not a fixed quantity; and instead of diminishing the supply for any particular calling, every new calling which invites or develops a higher order of intellectual power or executive capacity practically increases the mental force available for all pursuits, ultimately if not immediately.

The circumstance that our preachers and politicians do not tower above the rest of men as they used to is no evidence that they are intellectually inferior, but rather that the common intellectual average of men of affairs is higher than it used to be. To manage properly a great railway, steamship line, manufactory, or to devise and develop a novel and useful industry, often calls for a wider range of knowledge, a higher grade of intellectual and moral force, than is needed to rule a state, command an army, compose a book of philosophy, or fill the loftiest pulpit.

THREE SUCCESSFUL EFFORTS.

Three notable feats of human effort and endurance have just been brought to successful issue. The first was of questionable utility in spite of the possible advantage of knowing the maximum capacity of the human frame for long-continued and severe exertion. In the six days' walking and running match, in London, ending April 26, the winner's score was 542 miles, beating by 21 miles the best previous record in a similar contest. During the first three days the winner, Brown, made 300 miles, a feat never before achieved. It is said that he left the track at the close in excellent physical condition.

The second achievement was also of doubtful utility. As a means of advertising his already sufficiently advertised swimming suit, designed for life saving in case of disaster at sea, Capt. Paul Boyton undertook last winter the terrible task of floating and paddling from Pittsburg to New Orleans. The Ohio was full of ice when he started, and the venturesome swimmer was often in imminent peril from being crushed in the ice floes as well as frozen by the intense cold. The voyage of 2,342 miles was completed in 80 days, the voyager being reduced almost to a skeleton by the severity of his self-imposed task.

Of a very different nature was the splendid feat of the Sugar Notch coal miners, who, to rescue seven comrades—six men and a boy—buried in a mine, accomplished the great work of driving and timbering a passage way of 1,200 feet through rock and coal, mostly rock, in the brief space of four days and nights. The imprisoned miners were found alive and well, notwithstanding their confinement of five and a half days. The party had been shut in by the falling of some acres of mine roof, caused, it is said, by a reckless stripping of the supporting pillars of coal; and luckily the door boy, who had gone in to warn the miners of their danger when the roof began to give way, rode a mule, which the men killed and ate after they found they could not get out. There was plenty of pure water in the mine, and, though gas accumulated somewhat in places, a spot was found where the air was fairly good and it was safe to build a small fire for cooking their mule meat.

It must not be forgotten that the noble band of rescuers toiled with slender hope of finding their buried comrades alive. If the latter had not been crushed by the falling roof or drowned by water, there was a strong probability that they had perished by the fire which broke out in the mine when the roof fell, or had been smothered by the liberated gases of the coal. Yet the bare possibility of saving life urged the generous toilers on, and happily their efforts were rewarded by the highest success.

The men who planned and cut the relief drift were not surrounded in their labors by admiring crowds, like the contestants for pedestrian honors; they had not the almost daily "grand receptions," "ovations," and the like which gave the river swimmer an abundance of noisy notoriety and substantial encouragement. They were probably unconscious of doing anything specially commendable; anything more than any miner would do for a comrade in distress. Yet who will say that the achievements of Brown or Boyton, however plucky or enduring, were not trivial in comparison?

THE ELECTRIC LIGHT IN PARIS.

The application of the General Electric Light Company for a three years' concession of the lighting of a number of public ways in Paris was rejected by the Municipal Council, January 28; and it was decided, at the same time, that the city should no longer contribute pecuniarily or otherwise to the experiments of the company. The reasons for this decision are, in brief, the practical failure of the electric light to meet the wants of public lighting steadily, efficiently, and economically. In their report the Council express the conviction that electric lighting is still in a period of trials and tentative processes, especially as to the regularity of its working. The frequent number of extinctions and their duration require the maintenance of gas apparatus concurrently with the electric apparatus, thus complicating matters and increasing expense. Finally, the high cost of electric lighting does not allow of its adoption for public uses.

Very naturally the City Gas Company is much elated at the failure of what threatened to be a serious rival. In the annual report of the Council of Administration of the company, presented March 27, it is asserted that the electric light was unequal in intensity and color; in foggy weather its brilliancy diminished with distance much more rapidly than gaslight; and its sudden and frequent extinction made it incompatible with the requirements of a service so important as public lighting. This everybody knew; but not so many were aware that in the Avenue de l'Opera a steam engine of twenty horse power was necessary to supply the electric centers extending along 360 meters, and that the application of electric lighting to the 1,800 kilometers of the streets of Paris, at present lit by gas, would require a motive force of 100,000 horses, more than double the power employed in all the industries of the departments of the Seine and Seine-et-Oise united; and the street lighting represents only the ninth part of the gas lighting in Paris.

How far a report by the electric company would modify these assertions we do not pretend to say. Obviously, however, up to this stage of the contest the victory rests with gas. At any rate the officers of the gas company are confident that the gas industry has nothing to fear from electric experiments thus far conducted.

NEW PROCESS FOR PRESERVING AND ORNAMENTING IRON.

We recently published an account of the Barff process of preserving iron by forming upon its surface an enamel of iron oxide by means of superheated steam and a high temperature.

We have now to describe another process, discovered by M. Dodé, by which iron is not only preserved from rust, but its surface may be ornamented, so as to resemble gold or silver, all at a comparatively small expense.

In the Dodé process the iron article, cast or wrought, is first dried, and then dipped in or painted with a composition of borate of lead, oxide of copper, and spirits of turpentine, which soon dries on the surface of the article. The objects are then passed through a furnace and heated to cherry red, the highest temperature being from 500° to 700° F. At this heat the metallic pigment fuses, enters the pores of the iron,