

The Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

At No. 37 Park Row (Park Building), New York.

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TERMS—Three Dollars per annum—One Dollar in advance, for four months.
Single copies of the paper are on sale at the office of publication, and at all periodical stores in the United States and Canada.
Hampson Low, Son & Co., the American Bookbinders, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.
See Prospectus on last page. No traveling agents employed.

VOL. IX, NO. 5...[NEW SERIES].....Nineteenth Year.

NEW YORK, SATURDAY, AUGUST 1, 1863.

BIG GUNS—WHY THEY FAIL.

We publish on another page a communication from "A Rifleman," in which he indulges in a free criticism upon the folly of attempting the use of Admiral Dahlgren's gun in the reduction of rebel strongholds. There is considerable force in his arguments, and they ought to arrest the attention of the Navy Department. We were assured by a friend of ours who witnessed the reduction of Fort Pulaski, near Savannah, that the rifled guns of Parrott, and James's shells, were far more effective than anything else in compelling the surrender of that stronghold. So terrible was their effect, that an opening was made in the fort large enough to admit the entrance of a storming force, had it been necessary. We are also assured from other sources, that the brave and accomplished General Gilmore, now commanding the siege of Charleston, has declared that he could have taken Fort Pulaski with two of those rifled guns, at one-tenth the cost which attended the attack; and if permitted to arm the iron-clads—or even part of them—with those guns, and shells, he could take Sumter, or any other fort in possession of the rebels. We are also informed that Mr. Parrott offered to furnish, gratuitously, four of his very largest rifled guns (300-pounders); and that another party offered to furnish the James's shell on the same terms, upon condition that two of the *Monitors* should be armed with them for the fight; but that the offer was declined, because Dahlgren insisted on firing his own gun instead.

We do not undertake to vouch for the full truth of these statements; but their truth or falsity can be easily ascertained. We have no idea that the Government intends to neglect the use of the most powerful means at its command to put down rebellion; but we are inclined to think that our amiable Secretary of the Navy is sometimes blinded to the real merits of powerful ordnance, which has not the sanction of those whose axes are continually upon the public grindstone. Admiral Dahlgren, for instance, has long been chief of ordnance of the Navy Department. He is an able and accomplished man; and we hope he may succeed in his attack upon Charleston; but we fear that his prejudices are very closely bound up in Dahlgren's naval gun. It is the offspring of his own brain, and he very naturally cherishes it; but it does appear to us that the Secretary of the Navy might at least have the independence to accept the offer of Mr. Parrott, and allow one or two *Monitor* vessels to have something besides the Dahlgren gun. Let the experiment be fairly tried; and if Dahlgren's gun proves to be the best, its use will be continued; if not, the supporters of the Government have a right to expect that its further use will be dispensed with.

EXPANSIVE WORKING OF STEAM IN MARINE ENGINES.

In ocean steam navigation, the expenditure involved is much greater, proportionally, as the length of the voyage is increased. This is due, not only to the greater length of time necessarily occupied, and the greater quantity of materials consumed: but also to the space required for the materials to operate the vessel, which might otherwise be occupied

by available paying cargo. Thus the coal required for a ten days' voyage, is double the quantity needed for a five day's trip; and as all the fuel must be carried by the vessel, it occupies double space, and necessitates the consumption of more power to carry it. The reduction of the quantity of coal usually consumed in ocean voyages, is a problem to which the attention of almost every inventive mind should be directed; for notwithstanding the numerous improvements which have been made in steam engineering, not a tithe of the heat-force of the fuel under combustion has yet been economized, and transformed into the mechanical power required for propelling vessels. There is, therefore, a large and inviting field presented to inventors, in this direction, for developing improvements. An article upon this subject from the *Engineer* (London), affords evidence of the interest taken in it by European engineers.

SIMPLE LOCOMOTIVE ENGINES.

While visiting one of our large engineering establishments lately, the superintendent pointed to a pile resembling a hay stack, covered with sail cloth, and with a humorous twinkle of the eye, said, "a big thing there." Lifting one end of the cover, he told us to take a look, which we did; but such a combination never before met our gaze. It was a steam-engine on wheels; and was provided with cog-wheels, sectors, bell-cranks, levers, and mechanical devices innumerable, packed as closely together as the works in a watch. Some men are "Jack of all trades; master of none;" and there are some machines designed to do an indescribable number of things, which are good for no one thing. This machine was one of those wonderful contrivances. It was intended to act as a common road engine, steam-plow, saw-mill, and several other things. But it was so complicated in arrangement as to be considered totally worthless for practical purposes; from the frequent leakages and disorder to which it was liable, and the difficulty of managing it properly. Simplicity of mechanism, is one of the great aims of thoroughly practical, common-sense engineers; and, above all other machines in the world, simplicity is most essential to a locomotive engine, either for rail or road. It is quite different from an engine that has a fixed position in a boat, or in a building; being subject to so many concussions and vicissitudes in moving itself. It should be constructed of as few parts as possible; in order to secure simplicity, lightness, and strength. The locomotives called "dummy engines," have been constructed to obviate a most senseless objection, which has been made to simple, common, high-pressure locomotives. The dummy is a condensing engine, which in addition to all the parts of a common locomotive, is provided with a condenser, extra pump, and other devices, involving extra weight, and complex mechanism; simply to make dumb the usual noise of the exhaust in the smoke pipe, while the engine is passing through streets. Every locomotive engineer knows that condensing engines are totally unfit for general railway purposes. Depending upon condensing engines, we never would have had our splendid railway system. The public in town and country should know that the common, simple, high-pressure locomotive, is safer than horses or *dummies*, and is more easily controlled; and that the prejudice against its use upon railways is worthy of the ignorance of the "dark ages."

THE VALUE OF RESEARCH.

Aside from the natural phenomena of the globe, most of the material operations upon it depend on skilled labor, and the intelligent co-operation of the human hand and brain. To-day, the chemist unfolds the secret of some subtle compound, or wondrous dye; to-morrow, the mechanic in his workshop combines anew the wheel, the pulley, and the axle, and from them produces a new and valuable machine. So also with the weaver. He intertwines in his fabric aspirations, hopes, and desires, which seem to tinge the bright pattern he elaborates. These artisans, members of separate and distinct callings, did not obtain their elementary knowledge and skill by intuition: they acquired it by close, untiring study, and continuous research.

At this very moment the earth teems with wealth,

undiscovered, and unknown, only waiting to be brought to light by the industry and perseverance of man. Nature has, locked up in her laboratory, vast stores of riches, which generations yet unborn shall delve and dig for. In one way or another, the natural forces of the globe are continually developing new features useful and ornamental to man. Quite recently have been discovered the beautiful aniline dyes, rivalling those of Tyre in their richness. But lately the Franklinite ore has been discovered,—a metal which bids fair to inaugurate a new era in iron castings. In brief, either new substances, or else ingenious combinations of old ones, are continually brought to public notice.

It is very true that a lucky thought may sometimes occur to anyone, which put in practice, produces a rich reward to the fortunate possessor. In like manner, an idler strolling in the mountains, may stumble on, and pick up a diamond. But, in general, neither fortunes nor diamonds are to be had in this way; and the only sure guide to their possession is through diligent study, and careful attention to a single subject. How often in the history of invention and discovery do we hear of the struggles of an inventor before his ideas are perfected; but how certain and gratifying the reward, when the invention is of unmistakable utility. A man who has a talent for invention is the owner of a mine of wealth if he only works it properly; and he is just as truly a public benefactor in his way as Franklin or Fulton. Even he who invents the deadliest gun, or makes the most impenetrable iron-clad ship, is also humanitarian in principle. The destruction of those engaged in it, tends largely to limit the prosecution of war, and confine its ravages. Men will learn the art of war no longer just so soon as they invent guns or defenses of a kind that preclude the possibility of success to either side. When this occurs, and not till then, shall the races of the earth cease to harass and annoy each other. Inventors, whoever you are, and whatever the product of your ingenuity may be, turn into the Patent Office what you have patiently elaborated; and avail yourselves of its facilities for furthering your interests: thus at the outset making assurance doubly sure, so that no vexatious delay or failure may occur through your submitting an imperfect, or badly constructed model. Your reward is as sure to follow, as the reaper is certain to gather in the product of the seed he has sown, when harvest time comes round.

RIOTS AND MOB LAW.

The recent scandalous exhibitions of mob law which have disgraced the city are now over. The fires of passion are not quenched however, but smoulder. Within the confines of a great city is gathered every conceivable degree of moral worth and worthlessness. Restraint being removed, law being overborne, riot ensues as a natural consequence. The inference is plain; had the same prompt action ensued in this city which was adopted in Boston and other places upon the first appearance of the outbreak, families would not now mourn, property would not have been sacrificed, and the integrity and majesty of the law would have been unassailed. The same spirit reigns to-day that existed two weeks ago, and were the authorities, either actually, or by confession or implication unable to stem the tide of ruin, similar scenes would be re-enacted. The riot was evidently planned before-hand, and carried out upon some basis of co-operation; not effectually, as of course it could not be. In proof of this statement we can cite personal knowledge of inflammatory telegrams dispatched from this city to the towns adjoining, which were pre-eminently calculated to cause trouble, and incite resistance to the lawfully constituted authorities. The panic which reigned here supreme for the first three days, extended also to the rural districts; but was promptly met by the energy of the authorities. It could as easily have been disposed of among us, had not incompetency, or something worse, left the city undefended.

Of the political character ascribed to the mob we say nothing, because words are worse than useless on that head. If there was any deep-seated determination on the part of the rioters to deter the Government from carrying out the conscription, the futility of such a course is fully apparent now. We do not believe, however,—that any such animus con-