Scientific American

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

At No. 37 Park-row (Park Building), New York

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TERMS—Two Dollars per annum—One Dollar in advance, and the remainder in six 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.
Sampson Low, Son & Co., the American Booksellers, 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. VI. NO. 23.....[NEW SERIES.].....*Eighteenth Year.*

NEW YORK, SATURDAY, JUNE 7, 1862.

## TORPEDOES TO DESTROY VESSELS.

Cannot a torpedo be invented that will blow to pieces any vessel in the world? is a question which is asked us more frequently perhaps than any other, and we believe that it will yet be answered in the affirmative. We are well aware that the efforts in this line have been ridiculous failures—even the latest and most ingenious devised by the rebels in this war—but the failures have always been owing to two causes, neither of which would appear very difficult to overcome.

One cause of failure—the most frequent in this war—is the powder in the apparatus getting accidentally moistened, generally from want of thoroughness in the workmanship. There certainly can be no difficulty in guarding against this occurrence. The powder might be inclosed in a copper vessel, with a small part made thin enough to explode a cap inside by striking the copper upon the outside.

The principal difficulty has been, however, to place the torpedo against the vessel's side or bottom, and it would seem that this might be overcome by invulnerable vessels like the *Monitor*, constructed to run with great speed. Supposing a mast were attached to the bottom of the *Monitor* or of the Steven's battery, so as to project forward 100 feet, and a copper cone holding a barrel or a hogshead of gunpowder was secured to the end of the mast, and a proper lock for discharging was connected with lines leading on board, would not the vessel be able to blow up anything that she could overtake? This plan is but one among scores that have been suggested to us, and we select it as a specimen not for its superiority, but because we are free to publish it. The apparent practicability of many of these plans has suggested the above remarks, and even if they are all defective our inventors could doubtless soon overcome the defects.

If the officers of the army and navy did not exclude from trial nearly everything but their own inventions—if government would make provision for giving decent attention to the rational plans of our ingenious citizens, we are satisfied that our seaboard cities could soon bid defiance to the mail-clad navies of the world.

## GREASE AND INDIA RUBBER.

If some means could be found to prevent the action of grease on india rubber, the discovery would be hardly less valuable than that of the vulcanizing process. When india rubber is dissolved in any volatile liquid, such as spirits of turpentine or benzole, the solvent may be expelled by heat, but when it is dissolved in any of the animal or vegetable oils there is no method known by which it may be separated. India rubber is soluble in all the fatty oils, and this property interferes with its use in many places where it would be otherwise exceedingly valuable; for instance, fishermen would wear india rubber overalls in preference to any other material, were it not for the fact that they are soon ruined by the oil of the fish; and india rubber belts have been frequently brought into discredit by the circumstance of a few being injured by their careless exposure to the contact of grease.

We do not regard this field as very promising, for it has been explored by many learned chemists, and it seems to be the nature of india rubber, in all combinations and under all circumstances, to yield to the solvent power of fat; still, in organic chemistry there is no known limit to the variety of combinations and of results.

## A GOOD MOVE IN LIFE INSURANCE.

Of all the institutions which are the product of modern civilization, there is none more purely beneficent than life insurance. It enables a man, by devoting a fraction of his income to the purpose, to make immediate provision for the support of his family in case of his death. The life insurance company says to a young man, pay us $25 a year, and we will give you a bond to pay your wife $1,000 immediately after your death, whenever that may occur. Older persons wishing to be insured for the same amount have larger annual payments to make, but the annual premium which a person commences to pay is not augmented as he advances in age. This arrangement is designed especially for men with families.

There is another system calculated for bachelors, or any persons without families, who have some property which they wish to enjoy the full benefit of during their lives, but which they do not wish to leave to any one else. The bachelor gives his money to the company, and they agree to pay him a certain amount annually as long as he lives; the principal then to belong to the company. As they do not have to pay back the principal, they can afford to pay more than the usual interest on the amount thus invested each year, and thus the man gets a larger income than he would by any ordinary loan. This form of investment is called purchasing an annuity.

The Mutual Life Insurance Company of New York have recently adopted the plan of combining life insurance with the sale of annuities, in cases where the parties desire it. They say to a man who applies to have his life insured for $1,000, we will pay this $1,000 to your wife in case of your death, or we will pay her every year as long as she lives a certain sum larger than the interest that she could obtain by investing the same amount in any other way.

In this case the children might not be as well provided for in the event of the death of both of parents, as they would in case the whole capital was received from the company at the death of the father, but the widow would receive a larger income during her life.

By reasonable care in making inquiries, there is no difficulty in selecting responsible companies in which to effect insurance on one's life, and every man who has a family can, if he pleases, avail himself of this means of making sure that they shall not come to want. In case of sickness or loss of employment, a portion of the money paid to the company in premiums can be withdrawn, and in many ways life insurance institutions are a great blessing to a large portion of the public, and we counsel persons in all conditions of life to avail themselves of the advantages that are likely to arise by investing in some of the various schemes offered by most good companies. The old wealthy institutions of this kind are usually the safest to purchase policies of.

## AMERICANS AT THE GREAT ENGLISH EXHIBITION.

At the great exhibition in London, in 1851, the Americans made a very sorry show, and at the present one they will make a poorer appearance still. This has been to some people a source of national mortification, but it ought not to produce such an emotion. The principal inducement for exhibitors to incur the great labor and expense of taking articles to these fairs, is the notoriety which they obtain; thus securing a market for their wares. The fairs are used as costly but very effective advertisements.

Now, our manufacturers are aware that the purchasers for their goods are not to be found in Europe, and they are naturally indisposed to expend large sums in order to display their merchandise before people who will not buy, however much they may admire. The commodities that we sell to Europeans are almost exclusively raw materials: cotton, tobacco, wheat, &c., and though these are shipped in enormous quantities, samples of them appear insignificant in a vast palace crowded with the countless articles of necessity and luxury of many civilized nations.

The few products of our manufactures which find purchasers in Europe—revolving pistols, sewing machines, &c.—are very prominently and fully exhibited at the world's fair in London, but the great majority of our manufacturers, whose articles are made exclusively for the domestic market, very wisely expend the money which they devote to advertising in a manner to attract the attention of those who may become the purchasers of their wares.

## REVOLVING TURRETS FOR BARBETTE GUNS.

Why should not the guns which are now mounted in the open air upon the tops of our forts be placed in revolving iron turrets? We can conceive of no better plan for mounting such a turret than that which is adopted for the dome of the Cambridge telescope. Form a groove in the lower edge of the turret, and a corresponding groove in the bed below, and place a sufficient number of turned cannon balls in the groove to support the structure. Then secure a geared ring around the turret, and let it mesh into a worm screw provided with convenient crank, and one man would be able to turn the structure easily by hand. If a telescope was arranged as in the turret upon the *Monitor*, the guns could be kept constantly pointing at a passing ship, and if the proper elevation of the piece had been previously ascertained by trial, there would be no difficult in hitting a vessel within reasonable range at every shot.

The embrasures could be made merely wide enough to allow the guns to be run out, and the barbette gunners would be safer than those under the casemates. The roof would be made conical, and on the sides toward the interior of the fort, they might be formed of open lattice work so as to secure perfect ventilation. On this side security might be provided against the admission of fragments of shells by placing one series of bars below the spaces in the upper series, so as to make the passages crooked.

Is not this idea worthy of the consideration of our military engineers?

## PRINTING IN COLORS.

The discussion of this subject at the Polytechnic Association, a report of which we publish on another page, was unusually interesting. Mr. J. E. Gavitt, who gave an account of printing bank notes in colors, is a man well known in the ranks of science. He was formerly of Albany, and visited Europe to purchase the instruments for the Dudley Observatory. He is now connected with the American Bank Note Company. The prints from nature were mentioned in the SCIENTIFIC AMERICAN at the time when they were received. The process embosses the paper besides coloring it, and it is difficult to distinguish the prints from pressed leaves and flowers. We remarked especially a bunch of seaweed, in which the involved crossings of the fibres were reproduced with a minute fidelity which would never be attempted by an engraver.

AN INDIA RUBBER OMNIBUS!—A Connecticut cotemporary states that an ingenious Yankee (what Yankee is not ingenious?) has invented an india rubber omnibus which, when "jam full," will hold a couple more. The inventor has not yet secured his marvelous machine through our Patent Agency, but as soon as he does so we shall hasten to interest our readers by describing his invention in our columns.

A CIRCULAR from the Patent Office says the results of the cultivation of sorghum the past year settles the question of its practical success. The value of its product is now counted by millions. One of the difficulties is the want of pure seed. To meet this want the Patent Office has ordered seed from France for distribution the present spring.

DISCOVERY OF COAL OIL IN CALIFORNIA.—The *Mining and Scientific Press* of San Francisco says that about twelve miles from Oakland a coal-oil bed has been discovered, from which large supplies can be derived for burning purposes.

FOR NEW ORLEANS.—It is estimated that over five hundred vessels will sail for the southern ports by the first of June. There will be at least two hundred clearances for cargoes of ice.

A NUMBER of choice horses and sheep have been shipped from Boston within the last week, to the order of parties in Australia.