dollars; and at the time she destroyed the ram *Arkansas,* August 6, 1862, she drew only 6½ feet of water. The *Lafayette* and the *Choctaw* were originally common steamboats on the Mississippi river.

From the above facts, it is apparent that it is not essentially necessary to expend untold millions of money in order to produce a good and efficient navy; neither is it essential so build new vessels. But it is essential to do away with old fogyism and fossil-like plans, expedients, and devices, and adhere to scientific principles and mechanical laws, as well as to past experience.

To awaken the attention of officials and Congress to a sense of the humiliating condition we are in, owing to our inefficient navy, we have only to refer to the last annual report of Hon. G. M. Robinson, Secretary of the Navy, and the records of the past. That our foreign relations are such as to demand of every honest citizen a faithful response to the *imperative necessity,* is apparent to every intelligent person in the country. J. . J. L

[For the Scientific American.]

A REMEDY FOR SMALL POX, BY ONE WHO HAS TRIED IT.

The following was written several months ago, but was not forwarded, as the press has been teeming with small pox "cures" which are generally so evidently worthless that I hesitated putting my little communication among the prescriptions; feeling almost sure it would meet with no more attention than is accorded to the many, placed daily before the prudently incredulous reader.

But I find it impossible to resist the conviction on my part that to withhold any longer from the public my knowledge of a remedy—or mode of treatment—for variola and its modifications, would be criminal, as well as weak, in view of my confidence as to a successful result.

Some years ago, I had a case of varioloid, in my family, contracted from actual contagion, but not from strictly immediate contact with variola. The patient, my daughter, a child nine years old, carried a muff to church, the day after her mother had loaned it for a short time to a young lady friend in the cars. This lady had just recovered, apparently entirely, from small pox contracted from her brother, who had returned home from the army, convalescent but during the period of active desquamation, after a recent and almost fatal attack of small pox.

Precisely ten days after my daughter carried the muff. on the eve of the tenth day, she was quite ill from a complication of symptoms. The next morning I noticed a number of spots on her skin, alarmingly suggestive of variola. Not having had any experience of such a case, I consulted a friend, a physician, who at once pronounced her disorder varioloid. He thought, too, that it would prove a severe case, as the symptoms, namely, fever, back ache, headache, nausea, and the general appearance of the eruption, warranted such a diagnosis.

I took the case pretty much into my own hands, as I had at once resolved to pursue a line of treatment entirely different from that usually employed in such cases. Some time in the year 1861, I read in a number of the SCIENTIFIC AMERICAN (of that year), that a new remedy, discovered by a French chemist, namely, *sodæ sulphice,* was attracting great attention in certain quarters from its success in the treatment of ulceration, etc., and more particularly by its having cured entirely several well attested cases of hydrophobia. Its many valuable properties were fully discussed, verified, and freely endorsed by the French College of Surgeons; and were in substance what is now given in ample detail in the "United States Dispensatory," 1871, thirteenth editorial article—"Sodæ sulphis."

After some delay, I obtained a bottle of this medicine, and made use of it according to the notice of its properties, as occasion gave opportunity and always with satisfactory results.

To resume the subject of my case of varioloid. I administered to my patient 15 grains of the *sodæ sulphice,* dissolved in milk well sweetened, every three hours. I also had her entire body oiled effectually with crude petroleum, applied with the bare hand.

The next morning the eruption was absolutely killed and dry; and the disease broken up, to the wonder and, I need scarcely add, the great relief of all interested. As no pustules had had time to form, not the least trace of the eruption remained; and in a few days my child was as well as ever.

When the "seventeen year locust" abounded in this region, it was found that the sting of the male locust was so poisonous as to produce serious and, in some cases noted, even fatal effects. A servant girl in my family trod upon a locust, and the sting had to be withdrawn with tweezers. The girl screamed with agony, and said it was "worse than forty bee stings." I gave her about 15 grains of the *sodæ sulphice,* and kept the wound wet with a cloth dipped frequently in a mixture of equal parts of spirits ammonia, alcohol, and strong water solution of the *sodæ sulphice.* Although her foot had swollen amazingly before I had time to prepare my remedies, yet it stopped swelling at once after the first dose and application. A sharp pain went through the foot occasionally, but in a few hours the swelling and pain were entirely gone.

When my interest was first excited by the article referred to, concerning the *sodæ sulphice,* I urged a prominent druggist to send for it. He consented, stating, as far as I remember, that I should have to wait some time for it, as he should have to order it through a London house. I received it in due time, labelled as above.

I have, since that first supply was exhausted, made use of the American preparation, the sulphite of soda; but I prefer the foreign (French) article, as the American contains a larger percentage of sulphuric acid, and is, in fact, a hyposulphate. However, this now officinal preparation is equally efficacious.

I used the *sodæ sulphice* with perfect success, in cases of ulceration and as a wash for scrofulous discharges of the eyes and glands, at the same time administering it internally, in doses varying from 10 to 30 grains, three times a day.

I would strongly urge the use of the crude petroleum in connection with the *sodæ sulphis,* for variola and all its modified forms; and in the treatment of measles, scarlatina, or any eruptive disease, whatever its nature may be. The beneficial effect of oiling the skin is well known.

The "crude oil" I use is that sold here in Pittsburgh under the name of "Kiers Petroleum." Several varieties of crude petroleum can be got, on inquiry, that are so clear and pure as to be available for many purposes without refining. Of this article there is, fortunately, no scarcity.

As the latest edition of the "United States Dispensatory" may not be within reach of all interested, I subjoin, from my copy (1871) a portion of what is said of the remedy—*sodæ sulphice*—under the description of the article, pp. 826, 827.

"Sulphite of soda, (*sodæ sulphis*). This salt was first adopted as officinal in the present edition of the 'United States Pharmacopœia.'

"Medicinal uses. Sulphite of soda has been used in cases of yeasty vomiting with remarkable success. The matter vomited in these cases has a yeasty appearance on the surface, and is generally found to contain—when examined by the microscope—two microscopic fungi called *sarcina ventriculi* and *toruli cerevisiæ.* The diseases, in which these medicines (the sulphites) have been recommended, are purulent infection, of whatever origin; malignant pustules; hospital gangrene; erysipelas and other exanthematous fevers; malarial and miasmatic fevers; and in fine, all diseases which may be supposed to depend on absorbed poisons not acting on the tissues, but by a species of fermentation. . . . . .

"Also, in controlling suppurative ulcers, and all suppurative affections of the mucous membranes, as of the throat; the bronchial tubes, through inhalation by the atomizer; the urinary passages; and the alimentary canal; and in any case where there is reason to think that the local affection is sustained by zymotic influence or invisible organisms, (parasitic, vegetable or animal); and in any disease in which purulent infection of the blood may be produced by the same cause. They almost act as specifics in such cases.

"At certain stages of cancer they operate in the same way, by obviating the effects of putrid fermentations."

Dr. Farnsworth says, in an article on the influence of drugs upon *larvæ* and insect life in standing water: "A solution of soda sulphite destroyed the inhabitants of the water in one glass, in two hours," etc. By comparing the effects of the different drugs, the Dr. shows that the soda sulphite takes rank with the highest in efficiency.

Thus we have evidence that the soda sulphite is an agent (just beginning to be appreciated) that can be relied on in exterminating noxious parasitic life; also animalcules, that produce or follow upon various diseases; as a remedy for ulcers and sores, for nausea, and vomiting; for eruptive diseases; for poisonous stings and bites; and at the same time possessing no injurious properties whatever, when made use of, internally or externally, in reasonable proportions and quantity.

THE ELECTRO-MAGNETIC TELEGRAPH.--HONOR TO WHOM HONOR IS DUE.

At a recent meeting of the Regents of the Smithsonian Institute, correspondence was presented in relation to the proposal of the National Monumental Society to erect a monument at Washington to symbolize, in statuary of colossal proportions, the history of the electro-magnetic telegraph. Among others, a letter was read from Mr. F. O. J. Smith, who was one of Morse's earliest and strongest aids in the introduction of the telegraph, and who is very familiar with its original history. Speaking of the Monumental Society, he says:

"I feel constrained to say, if that highly laudable association resolves 'to erect at the national capital of the United States a memorial monument' to symbolize in statuary of colossal proportions the 'history of the electro-magnetic telegraph' before that history has been authentically written, it is my conviction that the statue most worthy to stand upon the pedestal of such monument would be that of the man of true science who explored the laws of nature ahead of all other men, and was 'the first to wrest electro-magnetism from nature's embrace and make it a missionary to the cause of human progress;' and that man is Professor Joseph Henry, of the Smithsonian Institution.

"Professor Morse and his early coadjutors would more appropriately occupy, in groups of high relief, the sides of that pedestal, symbolizing by their established merits and cooperative works the grandeur of the researches and resulting discoveries of their leader and chief, who was the first to announce and to demonstrate to a despairing world, by actual mechanical agencies, the practicability of an electro-magnetic telegraph through any distances.

"All telegraphic inventors, from Steinheil, of Germany, down through Cooke, and Wheatstone, and Bain, of England, and Morse and House, of our own country, are but disciples to the science of Henry; and the world is indebted to the latter alone, and to our country, for the first and earliest revival of incentives to mechanical genius directed to telegraphic results of both the electric and magnetic orders, subsequently to the announcement of Barlow's experiments, which were accepted by the scientific world as demonstrating the utter impracticability of such telegraphs.

"But Henry pushed on and melted away his toiling hours in more than four thousand experiments, piercing the mysteries of the subtile forces of galvanic electricity and electro-magnetism, and at length won the victory beyond disputation. And to Joseph Henry our country and beyond it the 'rest of mankind' owe, first, last and forever, the highest and foremost distinction in their monumental symbols of telegraphic history.

"To place the statue of any man above that of Professor Henry in symbolizing the history of the electro-magnetic telegraph, would be to reverse the order of nature as much as if the apex of a monumental shaft were inverted to rest on its pedestal. It would be, in fact, more symbolical of the misdirected judgment of its promoters, than of enduring honor to their subject. It would be to perpetuate, in granite and bronze, a blunder of history. * * * * * *

"Dr. Barlow reached, in 1825, the same mechanical point that Professor Morse reached in 1837, and failed of success for the want of Professor Henry's discovery, for *then* it had not been made known. And, in 1837, Professor Morse must have failed without Henry's discovery, of which he was ignorant, although it had been made known to all men of science several years previously.

"Then Barlow and Morse are inventors of exactly equal merit *in the electro-magnetic history,* although the former was in advance of the latter many years.

"Barlow used the Moll magnet and Morse used the Moll magnet, and neither could succeed.

"Barlow used the quantity battery and Morse used the quantity battery, and neither could succeed.

"Neither knew how to propel the galvanic current *to* a distance, and neither knew how to generate the needful magnetic forces *at* a distance; and hence each failed to construct a practical electro-magnetic telegraph that could be worked at a distance from the operator beyond from 'fifteen to forty feet.'

"Who invented the needful agencies to breathe the breath of life into the mechanism of each—of Barlow and of Morse, and of all other forms of mechanism for an electro-magnetic telegraph?

"Undeniably, Professor Joseph Henry is that man; and 'to him,' I repeat, 'our country, and beyond it the rest of mankind, owe, first, last, and forever, the highest and foremost distinction in their monumental symbols of telegraphic history.'

"In vain will ephemeral pretensions contest this honor. Time, the great unfailing touchstone of exact truth, will correct the errors of partisan and sordid sycophancy; and history, sublimated by true knowledge, will write the name of Henry at the head of the column of well earned, immortal fame in this department of human progress.

"To such a monument I would cheerfully subscribe in the ratio of my means, but to none other that shall precede it, though flattering may be the encomium of having been an early coadjutor of Professor Morse.

"I will thank you to make these sentiments known to the finance committee of the Monumental Association, with my highest considerations of respect for their patriotic motives.

"I remain, with great respect, your obedient servant,

"FRANCIS O. J. SMITH."

PATENT OFFICE DECISION.

In the matter of the interference between the application of Thomas Hanvey and the patent No. 102,346, granted to Henderson Willard, April 26, 1870, for improvement in barrels. Appeal from Examiners-in-chief.

Leggett, Commissioner:

The invention in controversy is a barrel or cask made, in the manner usually adopted for making cheese boxes, of thin strips of wood bent around a mandrel and the ends fastened with nails driven through and clinched. The barrel is made of two plies, one within the other, and so arranged as to break joints. The inner ply is a little shorter than the outer, thereby making a shoulder upon which the head rests.

The evidence shows that Hanvey conceived the idea in 1866, and that he produced some small specimens for exhibition; but there is no evidence to show that he has ever made a barrel for use as such up to the time of filing his application, October 31, 1870.

Willard shows that he began making barrels involving the invention in December, 1869; has continued the same, and applied for a patent April 1, 1870. There is no doubt but the parties are both independent inventors of the device in question. Hanvey first conceived the idea; Willard first reduced it to practice, and threw it upon the market, the first to come to the office, and had his patent six months before Hanvey applied. Yet Hanvey, being the first to conceive, is entitled to priority, provided he used "due diligence" in reducing his idea to practice, and in making application for his patent. Did he use such diligence?

Hanvey states himself that he made the invention complete in 1866, and that in that year or the next he made a barrel; but, notwithstanding the fact that he is a barrel maker, he has never made one since. He tries to account for this neglect of his invention by proving that he was sick during two years of the time. The proof, however, shows that he was not so sick as to be confined to his house or to keep him entirely from business. From his own statement, his invention required no more study and no more experimenting. His model was already made, and I can see no reason for delaying application for a patent, except a want of appreciation of the value of the invention. He evidently regarded it as impracticable or of very little value, and therefore gave it no attention. Willard had invented the same thing, obtained his patent, and put the barrels manufactured under his patent upon the market before Hanvey awoke to the knowledge that his invention was of any value. He slept too long. The man who invents a device and hides his invention under a bushel until another has invented, patented, and developed the same thing is not regarded with favor in this Office or before the courts.

The decision of the board of examiners-in-chief is affirmed, and priority decided in favor of Willard.

SULPHUROUS acid boils at 17$\frac{6}{10}$ degrees Fahr.

Cotton Seed Hulling Machine.

Thousands of planters in the South are in the habit of throwing away large quantities of cotton seed, of which they cannot dispose and for which they have themselves at present no use except as manure; yet they buy corn from the West to feed their mules and cattle. These will be interested to learn that a machine has been invented which can, it is claimed, be sold at so reasonable a price as to pay for itself in a very short time; it cracks the seed and separates the meats, which can be used for oil or for feeding purposes. The hulls, when rotted, make a splendid manure.

Fig. 1

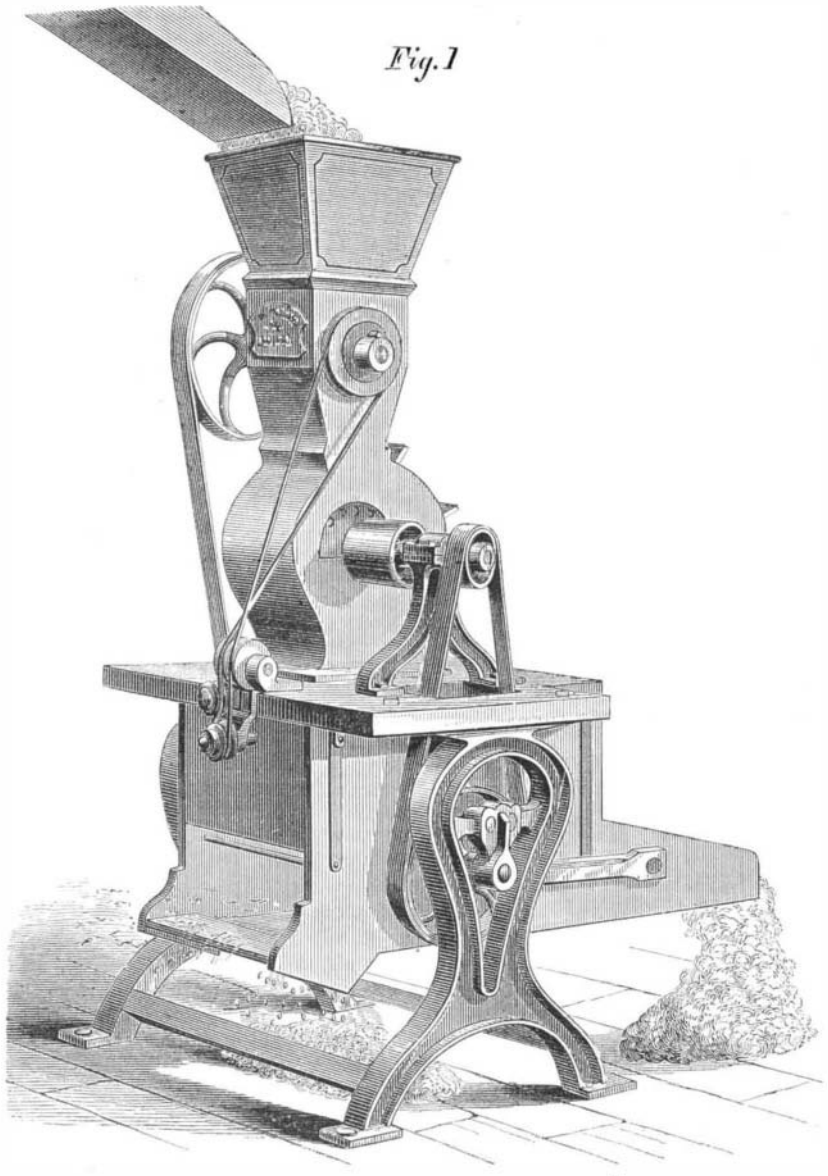
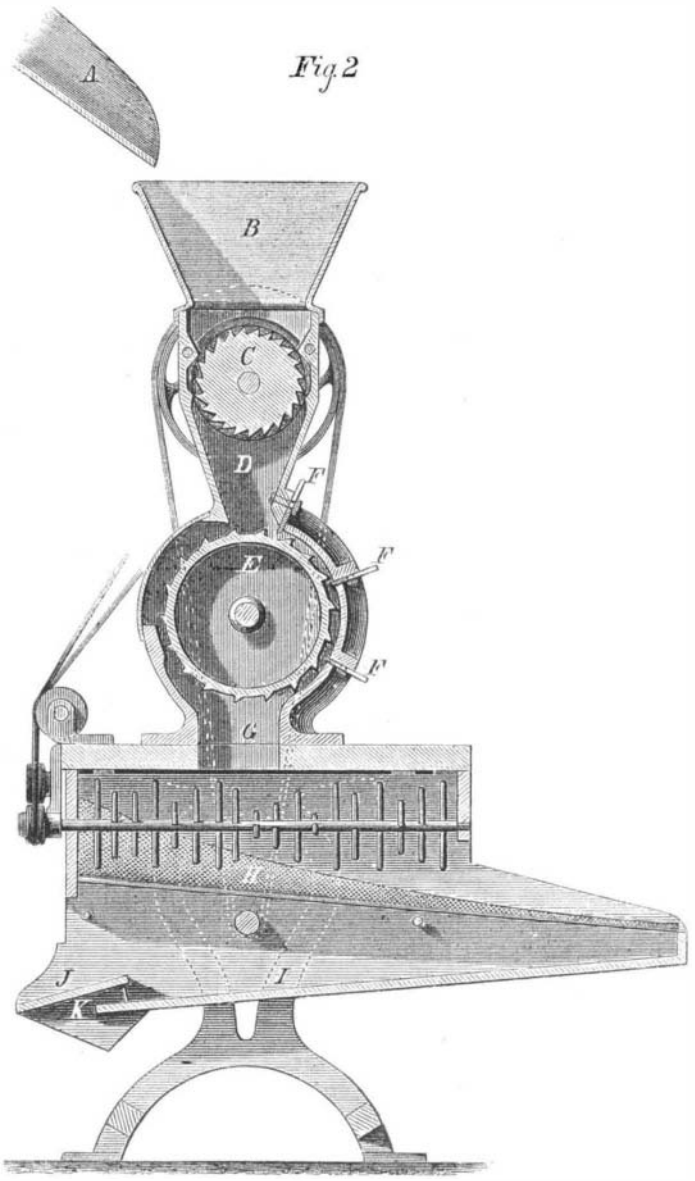


Fig. 2



KAHNWEILER'S COTTON SEED HULLING MACHINE.

Our engravings illustrate this new huller. It has its origin from a very successful machine adapted for oil mills, and patented by the same inventor in 1869, and which has been used over three years in some of the largest oil works.

Mr. Kahnweiler designed, in this machine, to simplify the construction of the original machine, so that it might be managed by almost any laborer, and at the same time greatly lessen the cost. There is a great demand among planters for a machine of this kind. to prepare seed for feeding purposes; also to fit it for sending to distant oil mills, to which it might not pay to ship the unhulled seed.

A new improvement also, a screening apparatus, is attached to this machine, forming a complete hulling mill on a small scale. It separates the meats from the hulls effectually without the use of a fan, and is therefore less complicated, and requires less power to run it. The same separator is adapted to use in all the cotton seed oil mills, as the work is done in a small space, and the separator can be built at much less expense than ordinary revolving screens, while it is claimed that it does more perfect work.

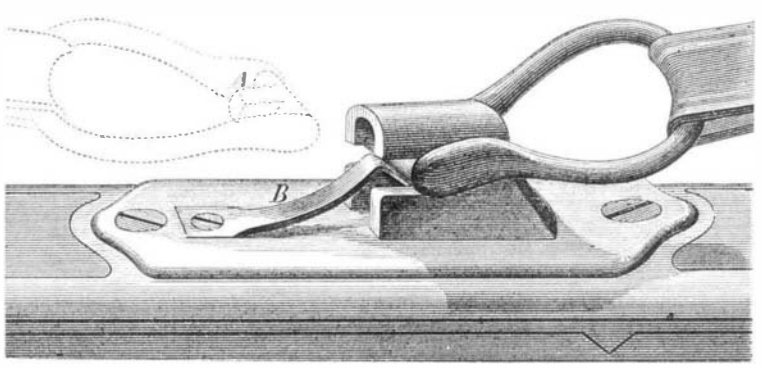
The operation and parts of the machine will be understood by reference to Fig. 2, in which A represents the chute which conveys the seed to the hopper. B is the hopper, C is a toothed or rather a ribbed cylinder, which feeds down the seed, but arrests the passage of stones, sticks, or other substances likely to injure the machine. These foreign matters wedge between the cylinder and the hopper, and cause the belt, which drives the ribbed cylinder, to slip until the obstruction shall have been removed. D is the chute through which the seed passes from the feed cylinder, C, to the hulling wheel, E. This wheel is made of three notched and ribbed sections, which act in conjunction with the knives, F, in the concave shell of the hulling wheel, to crack the hulls of the seed, The sections of the hulling wheel are so arranged that the cutting notches or ribs are staggered, thus rendering the action of the huller more uniform and steady. The knives are adjustable, so as to secure their proper action upon the seed. G is a chute between the hulling cylinder and the screen, H. This last is made of wire netting and bent into the form of a portion of the surface of a cylinder. The seed, when it reaches this screen, is acted upon by a revolving agitator or rubber, formed of a shaft with radiating arms, as shown, which completes the separation of the hulls from the kernels. The latter pass through the screen, while the coarser hulls and fibers are carried along and discharged from the lip of the screen. The hulled seed is then received into the box screen, I, which being shaken by suitable mechanism, separates the still remaining lighter portions of the hulls that pass the wire screen, carrying these portions out over the apron, J, while the cleaned and hulled seed passes out through the chute, K.

The machine is compact, and may be run with one horse power. The invention is secured by several patents, obtained through the Scientific American Patent Agency, the last of which bears date January 9, 1872. For further information address David Kahnweiler, 241 East Fifty-seventh street, New York.

SIMONS' SAFETY HOLD-BACK FOR CARRIAGES.

The nature and object of this improvement secures, at a trifling cost, a neat, convenient, and safe hold-back for all vehicles drawn by a single horse. It is constructed in such a manner that when tugs unhitch, or the singletree breaks, it will let the horse go free It is stated, from a reliable source, that more persons are killed every year by runaways than are killed on railroads and steamboats, and a large portion of these accidents are occasioned by the tugs unhitching, and the horses getting frightened and running away.

This invention appears to afford security against accidents of this kind, and is, in our opinion, an excellent substitute for



the clumsy and inconvenient practice of wrapping the hold-back strap two or three times around the thill, and through an iron or a leather loop, so that the horse cannot become detached from the thills until the harness breaks.

These hold-backs are attached to the upper side of the thills, and the quarter straps of the harness pass through the rings of the hold backs instead of around the thills. The moment the tugs unhitch, or the singletree breaks, and the horse attempts to run away, he turns the ring over, it unlocks and springs out (as shown in the dotted lines of the engraving) thus letting the horse go free.

The projection, A, shown in the dotted outlines, presses upon the spring, B, when the ring is reversed, forcing the latter down so that the ring slips out from the slot in which it plays previous to its release.

Patented April 4, 1871, by N. W. Simons, Williamsport Ohio, whom address for further information.

Good Practical Advice.

Thomas Hawksley, Esq., was elected in January last, to the presidency of the Institution of Civil Engineers, London and on taking the chair, delivered a very interesting and able address, in which the existing condition of science, practical and theoretical, was reviewed in glowing terms. His address closes with the following sound and sensible advice for young men.

1st. Of all things, don't attempt too much. 2nd. Keep up and augment your knowledge of mathematics and the applied sciences, especially of those sciences which are most needed in that walk of the profession which you have selected for your own path; but again, I say, do not attemp too high a flight, for if you do you will never become a practical man. 3rd. Do not let your French grow rusty, and acquire German if your leisure and aptitude are sufficient for the purpose, because your future avocations may be in countries in which these languages are either habitually spoken or are in considerable use. 4th. Acquire in the office, and by the study of esteemed works, a knowledge of form and design. 5th. But bearing in mind that you will never become a practical engineer on theory alone, take every opportunity which presents itself of becoming apt in surveying and levelling, and in the methods employed in the settingout of works; learn the uses and applications of tools; make yourselves able to distinguish a good material from a bad material, good workmanship from bad workmanship, sound ground from treacherous gound, good puddle from bad puddle, good mortar from bad mortar, and a good workman from a bad workman. This knowledge is not to be obtained in a school, a college, or an office, and cannot be learnt from books. 6th. Make yourselves acquainted with every description of plant, and all the appliances and contrivances which an experienced contractor employs for the purpose of rendering a paper design into a substantial construction. 7th. Keep brief treatises on geology and chemistry always at hand, for some acquaintance with these sciences cognate to engineering is, in the present day, almost essential. 8th. Practise as much as possible the art of mental computation, for this will give you the means of almost intuitively arriving at determinations on questions of cost, and of at once seizing on the best of several alternative plans or methods. 9th. Be not afraid of soiling your hands or dirtying your boots, but be in every other respect—in thought, feeling, and conduct—a gentleman.

OVER the western half of the Atlantic ocean there are three times as many storms as there are over the eastern side.