Scientistic American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors. PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, six months postage included 1 60

(Hubs.—One extra copy of THE SCIENTIFIC AMBRICAN will be supplied gratis for every club of five subscribers at \$3.20 each; additional copsame proportionate rate. Postage prepaid. Remit by postal order. Address

MUNN & CO, 361 Broadway, corner of Franklin street, New York.

The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN, THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5 00 a year, postage paid, to subscribers. Single copies, 19 cents. Sold by all news dealers throughout the country.

Combined Rates. - The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year postage free. on receipt of seven dollars. Roth papers to one address or different addresses as desired.

The sufest way to remit is by draft, postal order, or registered letter.

Address MUNN & CO., 361 Broadway, corner of Franklin street, New York.

Scientific American Export Edition.

The SCIENTIFIC AMERICAN Export Edition is a large and splendid periodical, issued once a month. Each number contains about one hundred large quarto pages, profusely illustrated. embracing: (1.) Most of the plates and pages of the four preceding weekly issues of the SCHENTIFIC AMERICAN, with its splendid engravings and valuable information: (2.) Commercial, trade, and manufacturing announcements of leading houses Terms for Export Edition, \$5.00 a year, sent prepaid to any part of the world. Single copies 50 cents. to secure foreign trade may have large, and handsomely displayed an nouncements published in this edition at a very moderate cost.

The SCIENTIFIC AMERICAN Export Edition has a large guaranteed circu-Address MUNN & lation in all commercial places throughout the world CO., 361 Broadway, corner of Franklin street, New York

NEW YORK, SATURDAY, AUGUST 9, 1884.

REMOVAL.

The Scientific American Office is now located at 361 Broadway, cor. Franklin St.

Contents.

(Illustrated articles are marked with an asterisk.)

Acids, bile, source of	Lat
Anomalies of sew. mach. business 80	La
Bricks, about 82	Lie
Bronze, Tucker 84	Ma
Business and personal 91	Ma
Canal, Panama. the	Mo
Cement to connect glass and brass 86	Μu
Chisels, cold, forms of 81	Μu
Cholera	No
Cholera, advice about 89	No
Clock in Trinity's tower. the 82	Pa
Collodiographic, pro., Henocque's 86	Par
Corn planter, check row* 82	Ph
Curbstone and teleg. wire conduit*83	Pi
Dickson, Thomas, death of 81	Pla
Doorway of furnaces, the 82	Ra
Flectric light patents	Ra
Engine house, interior view* 79	Rav
Ericsson, Capt., the venerable 81 Fire escape. Jensen's* 84 Fire department of New York 85	Sav
Fire escape. Jensen's* 84	Sei
Fire department of New York 85	Sci
Fluxes, welding 85	Spe
Gas works, nature's 88	Ste
Germ-ane	Ste
Glass bearings 82	Ste
Gunboats, stern-wheel, French* 97	Te
Hydrophobia experi., Pasteur's 89	Tid
Inventions, surjectives	Tin
inventions, engineering	Tra
Inventions, machanical 91	T₩
Inventions, miscellaneous of	Va
Inventor, a lucky	W٤
- epan University, Am. mode a for 90 i	We
Labels as subjects of copyright 80	Wo

are marked with an asterisk.)

88 Lathe feeds.
89 Laundry, the, facts about.
82 Light, gas, new.
84 Manure loader, Davis*
85 Manure loader, Davis*
86 Moscular contraction after death
87 Money in Treas. awaiting owners.
88 Muscular contraction after death
88 Notes and queries.
89 Notes and queries.
89 Notes and queries.
80 Handle of the contraction after death
81 Patent Office report, British.
82 Panama canal. the.
83 Patent Office report, British.
84 Patent Office report, British.
85 Patent Office report, British.
86 Patent Office report, British.
87 Plants, climbing, in trees.
87 Plants, climbing, in trees.
88 Railroad, elec., street, new.
89 Railroad, wonderful, a.
80 Railroad, wonderful, a.
81 Saw works, Emerson, fire at.
82 Scew, perfect, the.
83 Scerew, perfect, the.
84 Scew press, improved friction*
85 Scerew press, improved friction*
86 Stern wheel boats, new*
87 Steel made and reworked.
87 Tea, rolling and curing.
87 Tidal wave a wide reach of
98 Tidal wave a wide reach of
99 Tidal wave. n plates, how made.....ace fastener. Lindsay's*...

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 449,

For the Week ending August 9, 1884.

Price 10 cents. For sale by all newsdealers.

DA	GE	
I. CHEMISTRY AND METALLURGY.—The Iridium Industry.—By WM. L. DUDLEY.—Where and how the metal is found.—Its properties.—Mr. Holland's method of working the metal.—Uses	7159 7161 7162 7163	
II. ENGINEERING AND MECHANICS.—Chimney Climbing.—The old kite-flying method.—The new method.—With engraving. 7 Improved Hop Washing Machine.—With engraving. 7 The Two Manners of Motion of Water.—By Prof. O. REYNOLDS.—Use of coloring to render fluid motion visible.—Circumstances conducive to direct or steady motion, and to sinuous or unsteady motion.—Effect of oil on the sea. A Novel Globe Valve.—With engraving. 7 Improved Pumping Engines.—With engraving. 7 The Gardner Portable Machine Gun.—3 engravings. 7 Improvements in Locomotives.—With engraving. 7 The Distribution of Steam in Cities Water Supply.—Artesian wells.—Ground Water.—Effects of saintary works. 7	7162 7165 7166 7166 7166 7167 7167	1 1 1 1 1 1
III. TECHNOLOGY.—A New French Steam Brewery.—With engraving	7160 7160	
IV. ELECTRICITY, MAGNETISM, ETC.—Minchin's Absolute Sinus Electrometers.—2 engravings Dr. Kohlrausch's Apparatus for Magnetic and Electric Measure- ments.—8 engravings	7168 7169 7170	1
V. ARCHITECTURE.—Cork Cathedral.—With full page engraving 7	7164	
VI. NATURAL HISTORY.—The Burrowing Cray Fish 7	7174	1
VII. MEDICINE, HYGIENE, ETC.—National Health and Work.—Address by Sir. JAMES PAGET at the International Health Exhibition.—What constitutes a healthy nation.—Average annual rates of sickness.—Annual loss of work in England and Wales.—Can this be prevented?—The essential bond between health and education. 7 Pasteur's Researches on Rables.—With 7 engravings	- 1	j
diseases.—By Dr. A. B. GRIFFITHS	7178	1

LABELS AS SUBJECTS OF COPYRIGHT.

The Commissioner of Patents in insisting of his power to rule as to labels and trade-marks, deciding whether the matter for registration is one or the other, seems to consider that both are the subjects of the same or parallel statutes. He acts as if it were his office to divide all marks of designation into two classes, according to some special classification called for by law. On inspection of the statutes no such state of things can be found to exist. Trade-marks derive their pear to be good reasons for advising the purchasing or the standing in the United States courts from enactments under the eighth section of the Constitution of the United States. We give that part which they are referred to: "Sec. 8. Congress shall have power . . . to regulate commerce with foreign nations, and among the several States and with the Indian tribes." The trade-mark act of March 3, 1881, confines its protection to "owners of trade-marks used in commerce with foreign nations or with the Indian tribes." This restriction was inserted to make the act constitutional, as the the authority for the registration of trade-marks in the Pa- sewing-machine patents expired, as is well known, in 1876, tent Office, and has nothing to do with labels.

The law on the subject of trade-marks is very well defined, and is illustrated by many important decisions. Thus the characteristics of a trade-mark are fixed. It must be nondescriptive and arbitrary; otherwise the statute will not apply. The Commissioner of Patents, following the numerous decisions of the courts, exacts this feature before admitting any mark to this kind of registration. He acts properly in doing this, as he is guided by and follows the decisions of the judges of the highest courts.

The status of labels is widely different; they are protected as subjects of copyright. Another clause of the same eighth section of the Constitution authorizes the different copyright acts. We quote as before the part relating to this subject: "Sec. 8. The Congress shall have power . . to promote the progress of science and useful arts by securing for limited times, to authors and inventors, the exclusive right to their respective writings and discoveries." For many years it had been the practice for registrants of | did not want the new makes on any conditions; wherat they labels to register them with the Librarian of Congress, the plucked up their courage. proper officer, under the old copyright acts. By the act of June 18, 1874, it was provided that ". . . prints or labels to turn out a finished, efficient, and durable sewing-machine. designed to be used for any other articles of manufacture" (than pictorial illustrations or works connected with the whose confidence subsequent events proved that they posfine arts) ". . . may be registered in the Patent Office."

It seems as if there were room for much doubt as to whether this act is constitutional. It appears doubtful if a mere label should be protected under a clause of the Constitution designed to secure to authors "the right to their respective writings." The inscriber of his own name upon a box of matches would hardly be an author in the sense of the for a dollar what had cost them one hundred cents. Constitution, and a designating label could not well be considered a writing in the same sense. Much might be said on doubt, in some cases turning out an excellent machine, this point. Yet by statute such protection is accorded, and could not get a foothold in the market, and one by one bethe Commissioner has nothing to do with the constitutionality or the reverse of these acts.

power to decide that anything presented for registration was a trade-mark. He had to accept everything that was offered, with them their own idols, nor can be persuaded to worship and could not consider the arbitrary or fanciful nature of a label a bar to its registration. The powers of the Commission- have adopted a certain type of sewing-machine cannot, it er of Patents in the matter of labels are inherited from the Librarian of Congress under the act of 1874. It seems perfectly clear, therefore, that he exceeds his power in refusing to register anything in the shape of a label because it may be also a trade-mark.

A less technical view may be taken of the case. Leaving aside all court decisions, it is perfectly clear that anything affixed to an article to designate or distinguish it is a label. A trade-mark is defined by law, but a label is not. The Patent Office in its use of Webster's definition of a label as their standard acknowledges this as far as the label is concerned. No technical limitation has been placed on it. It stands as a comprehensive term, including many subdivisions, and among them that of trade-marks. Thus, while anything registrable as a trade-mark should be registrable as a label, the reverse does not hold. The greater includes the less, and the label includes the trade-mark.

For a most clear and interesting statement of the case, we refer our readers to the decision in Willcox & Gibbs S. M. Co. versus E. M. Marble, given by the Supreme Court of the appear. His predecessor bowed to it, and changed the prac- confidence of a large and growing constituency. tice of the office to conform thereto.

NOW IS THE TIME.

a prominent manufacturer of tools and machines a short time ago. "We are making to lay up a stock," he said, "and are keeping our men on the prospects of future sales, instead of paying them from the profits of contracts already made." This company could afford to pay hands and store up a stock of finished work, as it had done before; but the manufacturer chose rather to sell at a low price than to pay insurance and the expense of the unavoidable deterioration of finished goods kept in stock. Lower prices and better terms—where terms are offered—can be obtained now than at any time within two or three years. Most men engaged

tools can anticipate their ordinary needs for a twelvemonth hence, and so can make their preparations for the reflux tide of demand that is as certain to come as is the spring to succeed to winter. Every period of depression in business has been followed by a corresponding uprising, and there is no valid reason for believing that this present season of quietude is to sink into one of stagnation. At all events, a business, to live at all, must have the means, and there apcontracting for of machine tools and manufacturing machinery now, while in those branches of business there is a temporary lull.

ANOMALIES OF THE SEWING-MACHINE BUSINESS.

IT was John Stuart Mill, we believe, who established the principle that public confidence could neither be stemmed nor directed by statute, and, perhaps, there has rarely been so apt an illustration of this as is to be had in the experience old act of 1870 had been declared invalid. As it stands it is of the original sewing-machine companies. The original and long before that time preparations were afoot to take advantage of the principle, now become common property. Capitalists invested their money freely, great factories were erected, and doubtless many had already figured out their prospective profits for the year when the time to begin the work of manufacturing was at hand and the great struggle began.

> There is reason to believe that the original patentees were not a little frightened at the prospect. Indeed, in certain quarters "stampede" would more accurately describe the condition of affairs when the market became "flooded" with sewing-machines, and prices fell to a point at which there was little or no profit, with a premonition that thereafter sewing-machines were to be given away.

> This state of affairs had not, however, long continued before the original companies discovered that they were selling about as many machines as before their patents expired, and that, better still, there was a numerous class that

> The fact is, these companies had for years been striving They would seem to have dealt fairly with their patrons, sessed. These patrons became accustomed to the mechanism of a certain kind of sewing machine, and they would have no other. Furthermore, they unconsciously acted as agents for their favorite machine among their friends and acquaintances. All this and more the old companies learned, and, like sensible business men, they no longer tried to sell

Do what they would, the new companies, though, no came bankrupt or went out of business. The fact is, this sewing-machine business is phenomenal, and has character-The Librarian of Congress had under the old practice no istics which, there is reason to believe, do not obtain elsewhere. As the wandering tribes of equatorial Africa take other gods, though shown to be more potent, so those who seems, easily weaned from their choice.

So too in the matter of ornamentation; the type of machine being once decided upon, the purchaser is credited with a disposition to put up with nothing less than all the other exterior arrangements for convenience, and it is stated upon good authority, that a certain class of machines being once fitted with a movable top and three drawers, no patroness, however poor, will thereafter, whatever the extra cost, be contented without them.

A psychological fact, possibly new, which has come to light in this sewing-machine business is that a woman will rather pay \$50 for a machine in monthly installments of five dollars than \$25 outright, although able to do so.

The curious processes of reasoning by which the feminine mind is led to regard the lapse of time as a cheapener and a hundred per cent, interest as of no consequence, have not yet, we believe, been discovered,

Seriously, the principal original or parent companies are yearly increasing their sales and realizing a fair profit without any patent rights save these pertaining to certain recent District of Columbia. Although decided on November 30, improvements. Nine of the newer companies have goneout 1881, it was not published in the Official Gazette of the Pa-jof business since 1877, and of the forty remaining not a few tent Office until Oct. 17, 1882. The present Commissioner, exist in little else but the name; the field being monopolized for some reason, refuses to abide by this decision. What by the old established ones or those which, long before the precedent he has for disregarding such an authority does not expiration of the sewing-machine patents, had secured the

This being the case, it may not, perhaps, prove uninteresting to review the sewing-machine field. Elias Howe's sewing-machine, though by no means the first made or used "Now is the time to invest in tools and machinery," said either here or in Europe, was patented in 1846; A. B. Wilson's, 1848; I. M. Singer's, 1851; Grover and Baker's, 1851; the Weed, Finkle & Lyon and Parham, 1854; the Florence, 1855. From 1857 to the present day there have been only a few really new type machines patented, the principal ones being the Willcox & Gibbs, the Empire, the Ætna, the Domestic, and the Victor. In all, since 1846 over two thousand patents have been issued on sewing-machines and their different parts and on sewing-machine attachments.

The machines are best classed by the kind of stitch produced. Four-fifths of all the machines now made use the VIII. MISCELLANEOUS.—Plague of Locusts in Yucatan.—By
ALIGE D. Le PLONGEON.

7174

in business requiring manufacturing machinery or machine

The Discrete Property of Machine Control of States to-day 106 sewing-machine establishments, lock-stitch; according to the last census, there are in the with an invested capital of \$12,301,830, employing 9,283 ly and without suffering, it seems possible that the instantapersons, to whom are annually paid in wages \$4,636,099, neous cessation of the nerve force may leave every muscle nopolize these manufactures, through nearly half of the in- assumed in life would be retained in death. Now we know centered in New Jersey and Connecticut.

for disposing of their machines throughout the world.

LATHE FEEDS.

For many years our tool makers have almost universally ago, and later, the chain feed was a favorite for all work on the lathe but screw cutting. It had its advantages. | So had the rack and pinion feed. Both these feeds took hold of the tool carriage midway between the V-ways, the proper point to avoid a diagonal strain. The rack protected its tween the heads very rapidly. In fact, many of the $screw_{\perp} so long$ as the rigidity continued. feed lathes of to-day have their run-back or traversing movement by means of a gear engaging with the threads of the screw, which thus serves as a rack.

As the best of toothed racks and gears are now cut, there is no need of any backlash; the epicycloidal curve to form the contour of the teeth insures a perfectly free rolling action without looseness. Such a cut rack with pinion or wheel would be just as accurate for the finer qualities of lathe work as the screw; and with properly arranged gearing such a feed could be used in screw cutting. In fact, there would be some advantages for some jobs in having a rack and pinion feed instead of the present screw feed. If there should be fear of sufficient wear of the teeth by use to create a backlash which might affect the integrity of the proposed screw, a double disk pinion would obviate this fault.

MUSCULAR CONTRACTION AFTER DEATH.

Dr. Brown-Sequard, Scientific American, July 12, maintains that fixed and rigid positions after death, speedily ensuing, are due to the last vital act, which has induced a "tonic contraction," and that causes of death which produce sudden dissolutions without pain or excitement may be the means of such a contraction. Assuming this to be true, still the modus operandi by which a vital act can leave such a "tonic contraction" after all vital power has ceased is not suggested by him, and we need one step further in the way of enlightenment. Let us see if we cannot take that step now.

In accordance with the observations of Du Bois Reymond, it has been pretty generally accepted that the normal state of even quiescent living muscle is one of electrical tension, and that during muscular contraction the tension diminishes in such a way that as the wave of contraction moves along the muscle it is preceded by a wave of negative variation. This variation is slight for a single contraction, but in those of great rapidity it may become so great as to completely neutralize the galvanometric deflection due to the normal current of the quiescent muscle.

These views have been attacked and sharply criticised, notably by Hermann in 1867, and as lately as 1877 Engelmann has come to Hermann's aid in Pfluger's Archiv. They maintain that normal muscle currents do not exist; and that those observed by Du Bois Reymond were due to the unnatural conditions of the muscles examined by him. He, however, has replied to their criticisms with great ability, and his views are now, as already stated, very generally adopted by physiologists. A consideration of these views may perhaps help us to a clearer idea of the position of the headless soldier of Sedan, as shown in Brown-Sequard's

The conditions required, in order that a limb or the entire body should be in a state of rigidity, are simply that the antagonistic muscles, the flexors and extensors, for instance, should be braced at the same moment to full activity, and the rigidity continues so long as the mutual action remains. If this action is not local, but general, such a figure will continue without motion indefinitely, excepting that gravitation may cause it to fall to the ground, if unsupported. But even such a fall would not affect the limbs; they would necessarily retain their position.

Now Du Bois Reymond has shown us that tonic contraction is the normal state of muscle fiber, and that relaxation is due to an accession of vital activity through the agency of nerve force. We know well that commonly when life ceases muscular contractility ceases with it. And we can readily see that when death comes as the result of disease or exhaustion, and is attended with suffering, the perturbation of nerve force and of muscle currents must be so great that such a result will surely follow. And as these include death in almost every form in which we ever witness it. we have naturally come to understand that muscular relaxation is its normal attendant and its immediate result. "He bowed his death came on Calvary.

But in the very few instances where death occurs sudden-

which the element of time does not enter is a wound which But, as said before, the original companies hold the field obliterates the base of the brain as well as the commencenow as they did before their patents expired. Only ment of the spinal cord. That there is an interval between four of the principal of these extend their operations over the cause and effect is doubtless theoretically true, but practhe whole range of work on a sewing-machine, beginning tically the interval has no existence, for it is infinitesimal. with the proprietorship of forests and getting out raw ma- Such a stroke must necessarily be painless, for life (includterial, to transportation facilities and a network of agencies ing of course sensation) is abolished at its occurrence. The two chief cases cited by Brown-Sequard are cases precisely in point.

The cannon ball at Sedan left nothing remaining above the lower jaw. The brain of the soldier at Goldsborough discarded other feeds for lathes for the screw. Forty years had been swept by a bullet from a Springfield rifle, that struck him in the right temple, while his head was turned toward his right shoulder, and beyond question inclined downward, for his leg had that instant crossed the saddle, and the stock of his own rifle was still on the ground. Following Du Bois Reymond, it is difficult to see how instantateeth and those of its pinion from falling chips and dirt, and neous rigidity should not ensue in each of these cases; it did it could be instantly reversed without much backlash. With ensue, whether our explanation be correct or not. And with it the carriage could be run from end to end of the bed be- each one the state of support was such that he could not fall

> Many questions and conclusions of intense interest are associated herewith, but for the present we must leave them untouched.

FORMS OF COLD CHISELS.

The cold chisel is not so often used in the shop as formerly, much of its old time work being done by the planer, the milling machine, and the shaper: but the time will never come when it ceases to be one of the most convenient hand tools ever made and used. There are a hundred occasions when it is better than any and all other appliances, and in emergencies it and the hammer are a whole kit of tools combined. But so much has the art of chipping declined that there are shop workmen who do not know the proper form of a cold chisel. Recently an ambitious machinistjourneyman just out of his time-exhibited a collec tion of tools "picked up here and there, and made at odd jobs," and among them were some cold chisels, which were worthless as tools unless they were remodeled. The flat chisels had the bit point wider than the blade, and these and the cape chisels had the bit and blade onea simple wedge extending from the stock to the edge, with a cross section precisely like that of the blade of a pocket knife. With such a chisel there would be no means of raising a chip, and every blow would merely drive the chisel, like a wedge, deeper into the metal until the bit broke off. The widening of the bit beyond the edges of the blade is a certain source of weakness.

The blade of a fiat chisel should be fiat, of an equal determinate thickness, one-quarter of an inch thick for a blade other requisite: the cutting edge should not be straight across, back of the center of the edge. The ridge between the 60° edge and the flat blade forms a fulcrum for lifting the chip at each successive blow. The narrow cape chisels should be made by similar rules, except, of course, the uniform in any walking match. thickness of the blade, which is impossible, but observing the same narrowing of the bit and the same "stunt" edge the use?" he could not have done it. His aim was to hon-

It may be asked: How can a clean job be done where corners are required, as in cutting keyways, if the bit is to be narrower than the blade? Simply by using a narrower bladed chisel for finishing the corners. There is no ordinary job that cannot be finished with chisels with bits appreciably narrower than the blades, using differing widths sopher in humble attire, capable of teaching many a more ners will make better work going down each corner in suc- lengthen the hours in weary speculations as to the utility of cession. These elegant, wedge-bladed, spreading bit chisels any honest pursuit, or in doubts as to results. "Meeting are beautiful to look at, but they are not necessarily useful trouble half way" is, in the timid sense, even more foolish because some manufacturers for the trade send them out in than "dropping buckets into empty wells, and growing

In the article to which reference has been made composite chisels—wrought iron with steel bits—were commended for certain work. It would be well, also, if, when the chisel than worry, which is usually only compensated, when the is made solid from the steel bar, the head or hammer end be best comes, or the worst is over, with the reflection, "What occasionally annealed. The continual hammering on the a flat I was!"-Phila. Ledger. end of the chisel not only brooms and disintegrates the steel, but it hardens it harder than any fire and water can do it, The inventor of the monitors which did such useful servand from this cause come sometimes serious accidents. The writer suffered for years from a disease in the eyes engendered by a flying particle of glass-liard steel from the head of a cold chisel with which he was working.

Fire at the Emerson Saw Works, Beaver Falls, Pa.

was burned out on the 23d of July. The walls all being Ericsson is very methodical in all of his ways, abstemious of brick and stone are still standing, and none of the roof in his habits, and is always at work; he begins immediately head" is the fearfully expressive term employed when fallen in. Are fully insured, and with their accustomed en- after an early breakfast, and is so busy with tools or pen for terprise have already commenced rebuilding, and expect to sixteen hours of every twenty-four that no one ever finds be in operation again inside of two weeks.

Death of Thomas Dickson,

Scotch energy, capacity, and thrift, no less than the mani-The value of materials used is figured at \$4,829,105, and the fiber in its normal condition. If that could be, universal fold opportunities presented to every industrious young value of the products at \$13,863,188. Sixteen States mo- rigidity would instantaneously ensue, and the last position citizen of America, were well illustrated in the life of Thomas Dickson, who died July 31, at Morristown, N. J., of vested capital and one-half the value of the products are that the one cause of all causes which can bring a death into heart disease. He was born in Berwickshire, Scotland, in 1822, his parents removing to Canada in 1832, and to Susquehanna County, Penn., in 1834, where Thomas, quarreling with a schoolmaster, bired out at the age of thirteen, to ride a mule in the mines. He then engaged as a clerk, and subsequently became a porter in a country store, afterward purchasing an interest in a foundry and machine shop at Carbondale. In 1856 he took the initiative in starting the Dickson Manufacturing Company at Scranton, Penn., a firm which has been eminently successful in the manufacture of steam engines and mining machinery. Since 1860 Mr. Dickson has been connected with the Delaware and Hudson Canal Company, of which he has been President since 1869. and had become one of the principal owners of coal and iron lands in the country. The output of coal of the company when he took charge was not more than 500,000 tons yearly, while now it exceeds 4,000,000 tons.

The mining operations have been extended over an area of about 44 miles, and, step by step, control has been acquired of a very extensive railroad system. In 1873 Mr. Dickson organized a company with \$1,500,000 capital, purchased 23,000 acres of iron land on the shores of Lake Champlain, and erected furnaces, which are producing pig iron and Bessemer. Mr. Dickson was also director in 20 or 30 gas, iron, banking, insurance, and other companies, many of which were planned and organized by himself. In 1872, with his wife and son, he made a trip around the world. He was a member of the Presbyterian Church, and was highly esteemed by a wide circle of friends and acquaintances.

Ready for Any Honest Work.

A recent writer defines "worry"—a trouble which makes many people sick, and even some to die-to be labor done without faith. He means by this, efforts made without confidence in the success aimed at. There is a world of truth in the saying, Courage, always courage! A successful man who overheard a less sanguine person drawl out, "I wish I could," turned upon him suddenly with the words, "Say I will, and you can!" That is what the energetic man had proved in his own experience, and what many a languid individual might prove too, if he would only once wake up. "Our doubts," the great poet has it, "are traitors."

The passengers and idlers in a certain street in New York were once upon a time amused by the proceedings of a poor fellow whom the police did not interrupt, though his movements gathered crowds, who stopped to look on and inquire. They went their way, admiring a persistence which almost argued insanity. The man had applied at the door of a store for assistance. "You are strong and able," was the answer, "why don't you go to work?" "Work! I would gladly, if any one would give me work to do." "Will you do a day's work if I give you a day's wages?" "Try me," was one inch and an eighth wide, and correspondingly thinner the answer. "Well, take that brick-put it on the curb at for narrower blades. At the bit, or point, the blade should the corner of Nassau Street. Pick it up again and carry it to be ground off at an angle of 60°. Then, the bit should not the corner of the Park. There lay it down. Take it up again be quite so wide as the blade; if the blade is one inchlet the and carry it back. Repeat the walk until working hours bit, or edge, be one thirty-second of an inch less. Still an- are over, and I will pay you a day's wages." If the man who gave this apparently senseless direction imagined that the but it should form a convex line, so that the corners shall be other would refuse the arrangement, he was mistaken. The man took him at his word, plodded on through a long summer day, and received not only his money, but the applause of the crowd, quite as well bestowed as those upon the victor

If he had "worried" over such questions as "What is estly earn a day's wages, and he accomplished it. It was not, to be sure, a very ambitious purpose, or a very dignified employment of muscle without mind. But it was done without "worry," and he survived that day and provided for himself food for the next. And it issafe to ay that man got around all right in other employment. He was a philoof chisels. It may be that on a cleaning, scraping finish in pretentious individual, with ample means, one great secret of a keyway a full width chisel with flush bit may be useful, 'life. We have only one day at a time to live in, and it is never but even here a narrow finishing chisel with drawn-in cor- worth while to shorten the work of that day, while we weary drawing nothing up." The world and its doings are made up of trifles, any way-some sad, some glad, and others foolish. But any honest folly which paus is better

The Venerable Captain Ericsson,

ice during our war with the South, and the author of the sun motor, the hot air engine which bears his name, and scores of other inventions, reached his eighty-first birthdayon the 20th of July. Captain Ericsson does not look or appear to be a man much past sixty years of age, and he seems as hale The interior of about one-third the area of these works and hearty as he did a quarter of a century ago. Captain