Scientific American

NEW-YORK, FEBRUARY 26, 1853.

The Commissioner of Patents.

With a change of administration there will no doubt be a change in the Patent Office.—This has been the rule, and we suppose ever will be. A new Commissioner of Patents has always been appointed with the elevation of an opposite political party to power. The present Commissioner, S. H. Hodges, Esq., has been but a short time in office, but during that period he has earned for himself in his new capacity, a high character for urbanity, ability, and courtesy. He has qualities of mind which eminently fit him for such an office, and had his political party been successful, we would have anticipated much good from his future administration. This, however, we cannot expect, and we have no views to present opposed to political rules when good men are selected to fill the places of good men.

The office of Commissioner of Patents is a very responsible one, and politically speaking is one of great influence. The number of inventors in these United States is not small, and their influence we know is very powerful. A man of courteous manners, of a clear mind, well acquainted with law, mechanics, and scientific matters, and of an honest open character, is required to fill such an office. He should also be intimately acquainted with inventions and the affairs of the Patent Office. Now where is the man to be found in the political ranks of the successful party who has these personal qualifications, without which we would not desire to see him appointed Commissioner of Patents. The Hon. D. K. Cartter, of Ohio, the present Chairman of the Committee of Patents in the House of Representatives, appears to us to be well qualified to fill it. We have no interest in the matter excepting the desire to see a good and proper Commissioner appointed. We certainly have some knowledge of the qualifications necessary for any man to fill that office, and we merely point to a gentleman who appears to us to possess them. We do not say who should get the office, we merely point out the qualifications a person must have to perform its duties for the benefit of inventors, the progress of art and science, the honor of our country, and the credit and influence of the party in power.

Hot Air and Steam—The Ericsson Engine.

On page 186 are two letters discussing the merits of water and hot air, as applicable to propel machines with the greatest economy by expanding them through the agency of heat produced by combustion. The question discussed—strictly speaking—is not one we have raised, and we might truly say, "there is no controversy between us" in respect to what we have hitherto said. The arguments presented, however, are the only scientific ones that we have seen in favor of hot air as a superior substitute for steam. Mr. Mathiot expresses himself in favor of steam, while Mr. Bass seems to be halting between two opinions. We are well aware that the capacity of water for heat is 3·74 times greater than air weight for weight; but at the same time air is 815 times lighter than water; it takes 815 cubic feet of air to weigh as much as 1 cubic foot of water. Knowing as we do, that we would have a poor set of flying artillery if every pound shot required a cubic foot of powder to discharge it, we have in all our articles on this subject spoken of the comparative values of air and water, bulk for bulk, as motive agents, especially as air cannot be used at a high heat. Instead of adopting a positive theory, that "substances have a capacity for heat inversely as their atomic weights;" we would rather say, "substances have a capacity for heat, according to their nature and conditions," for ice, water, and steam (the same substances under different conditions) have different capacities for heat; water has a capacity of 1·0000, ice, ·5130, steam, ·8470.

The manner in which Mr. Bass has treated the question, shows him to be exceedingly dexterous in exterminating non-existing improbabilities. He compares water and air bulk for bulk, and raises the temperature of a volume of the latter to 3,682,210°, a heat respecting which no one can form any possible conception who has not visited the warmest corner of Hades. Let us treat the question as it stands plain and open.

As the capacity of water for heat is to air as 1·0000÷·2669=3·74, so will the same amount of heat which will raise a certain weight of water to 1180°, raise 3·74 times the weight of air to the same temperature. In comparing the two bodies we must take the real temperature of them both as it is. Air is 815 times lighter than water; it doubles its volume by the application of 491° of heat, and with the doubling of its volume, its capacity for heat is increased 50°—this we must also take into consideration. One pound of water multiplied by 1180° expands to 1728 times its volume. But air is 815 times lighter than water, and it takes 791 volumes of it to one of water multiplied by 1180° to equal the expansion of the water into steam. It is true, there is much less fuel used, but look at the volume of air to be operated on, and any person can see that when we take the element of time into consideration, the balance is in favor of steam, yes in favor of the steam engine without a condenser. But as in the Ericsson engine, the air is heated only to 384°, therefore we have (with the saving of fuel to be sure, for how can it be otherwise) 1180÷384=3·07; 791×3·07=2428·37 that is if the Ericsson engine could use its air at a temperature of 1180°, it would only have to use 791 cubic feet to produce the same effect by the same fuel, which it now requires to heat 2428·37 cubic feet of air. Mr. Mathiot views the question aright respecting the value of highly heated air. The man who consumes five times more food than another, and yet does the same amount of work five times faster, is the more profitable laborer; so it is with the steam and hot air engines; the former consumes more fuel, but yet does more work in less time. And what is meant by *capacity for heat*, just this, that if a body requires more heat to raise it to the temperature of another body, it takes a longer time in proportion to part with it. In the steam boiler we have a magazine of heat of 1180°, yet it raises the iron to only 212°, the strength of which is but insensibly diminished at such a temperature. The heat of a common fire is only 1141°; heat up the crown plates of the Ericsson's furnaces to this heat, and put on a pressure of 30 lbs. to the square inch, and what would become of them? they would be flattened out like pan cakes. They are limited to both a low heat and pressure, and to produce as rapid and as good effects in the same time as water to which heat is applied, they would have to carry hot air reservoirs as large as the temple of Babylon. The cold water fed into the boiler to supply that taken off in steam from it, is diffused among the hot water in the boiler, which may be compared to a mass of liquid fire as great in quantity as the hot water in the boiler is to the feed water. On the other hand, the cold air fed into the hot air chamber of the caloric engine, fills up the whole boiler, as it were, every stroke, and the heat of the furnace acts upon such a quantity of so bad a conductor as air, and the fire-surface is so small in comparison with the quantity of matter to be heated every stroke, that steam, when the element of time is taken into consideration, is far above air as a cheap agent in moving machinery. The pressure of steam (force increased for the engine) can be highly augmented in any steam boiler, without absorbing extra power of the engine, but this cannot be accomplished in the hot air engine, its pressure is limited and circumscribed by a low figure.

In calculating the economy of any motive agent, we must never leave out the element of time. Water being 815 times less bulky than air, weight for weight, has thereby the advantage of being more quickly acted upon because of its density. The feed pump of a steam engine is required to restore one volume of water for every 1728 volumes of steam used; the feed pumps of the Ericsson engine have to feed in 491 volumes of cold air for every 875 volumes of hot air used; and thus the difference of capacity in the two elements—air and water—for heat is beautifully compensated in the steam engine, by using the less bulky agent, to supply the magazine of force.

We would like, had we room, to say something to corroborate Mr. Mathiot's views of Mr. Frost's experiments. The time has already arrived when the honor which is justly due to his memory, is sought to be purloined by others. We will speak of this at some future time.

We perceive that some ignoramus in the "Akron (Ohio) Standard," has been endeavoring to astonish mankind by his knowledge, asserting that if, as we stated, the Ericsson required 8 times its power (250 horse-power) to double its speed, it would have engines twice the power of the Arctic's. Why, the engines of the Arctic work up to 2,290 horse-power.

The saving of heat to use it over and over again, is an idea imbibed by the false teachings of Prof. Harvefelt, of Sweden, who, perhaps, after reading the boast of Archimedes about his lever, stated in a public lecture, "that there is nothing in the theory of heat which proves that a common spirit lamp may not be sufficient to drive an engine of 100 horse power." Ericsson embraced this view, and "he has been in the habit of regarding heat as an agent, which, while it exerts mechanical force, undergoes no change;" so said John O. Sargent. This is a converse theory to that of Mr. Paine, with respect to the decomposition of water by mechanical action.

Burning Fluid Lamp Controversy.

On page 187 will be found a letter from Dr. Nichols, of Haverhill, Mass., respecting "burning fluids and the wire gauze lamp." We have but a few words in explanation to say respecting it and the matters upon which it treats. On page 173, in making a few remarks about burning fluids, we said, "there is no fluid so clear and beautiful for domestic artificial illumination as a mixture of turpentine and alcohol distilled together." It should have read, "double-distilled alcohol and turpentine *mixed* together." As we have furnished many persons with receipt for mixing these fluids, the error is a singular one.

We have repeatedly stated that the common burning fluids should not be used in houses where there are servants or children. We know of two cases of explosions, not of lamps nor cans containing the fluid, but by the fluid. One was by a servant girl, who thought that as paper saturated with oil was excellent for kindling a fire, she would try some of the burning fluid, which must, as she thought, be much better; she therefore saturated some paper with the fluid, put it in the stove, piled on some chips and charcoal, and then ignited the paper with a match, when lo, to her astonishment, off went the kindling pile like powder, the covers were thrown off the stove, and chips and charcoal scattered over the floor. The other case differed only from this in using some shavings for kindling a fire which had been saturated with spilt fluid, and were used in ignorance of this fact. No one was hurt, but these cases are positive proof of the danger of having such a fluid about.

We have the word of Mr. Newell, and also that of Dr. Jackson, to the effect that the latter had nothing to do either by consultation or otherwise, with the holes in the cap of Newell's lamp. We therefore rely on this personal testimony as positive. We do not know what kind of fluids they sell in Boston, but we know that a burning fluid (alcohol and turpentine mixture) has been sold here under the deceptive character of *rosin oil*—a safety fluid.

Prof. B. Silliman, of Yale College, in a letter to the "Boston Traveller," which has been extensively copied in other papers, asserts that the danger of explosions in lamps burning alcohol and turpentine mixtures, "may be entirely avoided by the use of wire gauze protectors, which have been recently introduced." These quoted words are from the letter. He also adds, "I have no interest whatever in the invention."

The subject of burning fluids and "safety fluid lamps," has excited a most interesting and explosive state of feeling among some of our New England professors of chemistry. The letter of Prof. Silliman is used as a tremendous truncheon of high authorative endorsement of Newell's wire gauze lamp, so are the certificates of Drs. Jackson and Hayes, of Boston, also that of Prof. Cleveland, of Bowdoin College, Maine. The lamp as made by Newell & Co., with the wire gauze protector, is the best we have seen; this is all we can say of the matter; we can only speak of that with which we are acquainted, and it it is a re-invention, the fact of Jennings' previous claim was, we believe, unknown to the re-inventor, whose name, we humbly think, has unjustly, for his honor, been kept from the public.—This subject has received all the attention we can devote to it, at least for some time.

Novel Engineering Project—A Marine Railway One and a Quarter Miles in Length.

The introduction of railways has produced many astonishing changes in the course and channels of our internal trade, and not least among these changes is that which is just being shadowed forth by the completion of the several lines of railroad in the States of Virginia, Pennsylvania, New York, and Ohio, through the various points on the Ohio river. What this change is to be is already indicated by the delivery, on the sea board, of cotton, pork, and other Western produce, by way of the Baltimore and Ohio Railroad, now completed to Wheeling. The advantages which must accrue by thus delivering produce in the sea board markets in from ten to twenty days, instead of as formerly, by way of New Orleans in about three months, are too evident to be overlooked. Some enterprizing gentlemen engaged in the Western trade have investigated this subject thoroughly, and have become satisfied that the present means for passing steamboats around the falls of the Ohio (by the Portland canal) will soon become entirely inadequate to the increased commerce of the Ohio, which must result from these new outlets. With these views they have projected the following novel plan for increasing the facilities so as to pass steamboats of the largest class around these falls.

It may be premised that the only present mode of passing boats in times of low water, is by the Portland canal, on the Kentucky side of the river; this canal can only pass boats the dimensions of which do not exceed 180 feet in length and 48 feet beam over the guards, consequently the business must then be carried on by boats within these dimensions. Referring again to the project above mentioned:—It is simply to construct upon the Indiana bank of the river a railway, the length of which will be about one and a quarter miles, and the width about 72 feet, with proper locks at each terminus; the whole to be of such magnitude as to be able, without discharging cargo, to pass steamboats of the largest class, or say about 350 feet in length and 80 feet beam over the guards. The difference in level between the head and foot of the falls may be assumed at about 24 feet, and it is proposed to lift the boat a part of this height in the lock, and the balance by the grade of the railway. The power to be used will be one or more stationary steam engines, applied to the moving of the carriage upon which the boats will be transported, by means of a tow rope or chain.

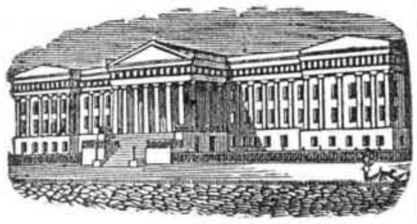
This project, although when first presented to the mind it appears chimerical and difficult of execution, will be found, upon thorough examination, to be perfectly practicable, and to present less engineering difficulties than many other important works already successfully executed.

The plans have been submitted to several eminent engineers, to obtain their views as to the feasibility of the project, and without exception, they have all concurred in the opinion that the work can be executed without difficulty, and at moderate expense.

The estimated cost of the work is $600,000, and it is estimated from reliable data that very soon after it is in successful operation, the receipts from tolls alone will not be less than $150,000 per year.

To Correspondents.

We have to ask some of our correspondents who are expecting replies through the Scientific American to exercise patience, as we are unusually pressed with enquiries; all will receive attention as soon as we have time at command.



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING FEBRUARY 15, 1853

CUT OFF FOR PUPPET VALVE ENGINES—By Horatio Allen & D. G Wells, of New York City: We claim, first, the combination of pawls, with the two arms, whereby the valves are iifted and tripped, as described.

Second, the combination of the arms provided with rollers which, in their action, assist in transferring the pawls from one arm to the other, with the pawls and loose toes, as described.

Third, the making the rollers adjustable with reference to each other, by means of supporting them on independent arms and connecting them to each other and the arms by means of a right and left screw, whereby the point of cut-off may be altered.

Fourth, the mode of operating the loose toes by means of pawls and rollers substantially, as described.

Fifth, the mode of working the valves, by hand, by means of toes supported on the rock shaft, substantially, as described.

CAR SEATS—By John Briggs, of Boston, Mass.: I claim a seat sliding in an arc formed in the framework of the chair, and fastened in any desired position as set forth, whereby the back is madeto follow the motion of the seat in such a manner as to preserve a constant or nearly a constant connection and angle therewith.

HARNESS FOR LOOMS—By D. C. Brown, of Lowell, Mass.: I claim, first, the fiiersconstructed with a spring nose, or its equivalent, so as to yield the twine, when the needles draw the stitches into the rest, and to take up the binding twine, or draw it tight, when the stitches slip off the needles.

Second, the apparatus or its equivalent for shoving the eyes off of the rod F, consisting of the cam J, slide D, lever, rod C, and slide E.

Third, the revolving spring nose flier or its equivlent in combination with the needle, or its equivalent, for the purposes set forth.

SPIKE MACHINES—By J. C. Cary of Richmond, Va.: I claim sustaining the heading lever upon a movable fulcrum, so as to be capable of adjustment to the requisite distance inside or outside of a vertical line drawn, touching the plane of the face of the griping dies, for effecting the heading of the spike, either up or down, or otherwise in one single motion upon its fulcrum, as set forth.

PAGING BOOKS—By R. M. Leslie, of Philadelphia, Pa: I claim, first, the spring slat type wheels, made after the manner, and operating for the purposes, described.

Second, the combination and arrangement of the spring slat type wheels, the adjustable posts, sliding arms, spring frame, inking rollers, with their tables and the rod K, with its ratchet and pawls, whereby I am enabled to number one side of four pages, by a single movement of the treadles, as described,

ARTIFICIAL TEETH—By L. F. Sheppard, of Alhambra, Ill.: I claim extending a suitable metallic plate over the masticating portion of artificial teeth, to protect them more effectually against injury from use, substantially as set forth.

SAW-SETTING MACHINE—By R. B. White, of Meridon, N. Y.: I claim the combination of the spring hammer. with the tooth gauge, both operating in the manner and for the purpose described.

SEED PLANTERS—By David and Herman Wolf, of Lebanon, Pa.: We claim the movable clearer arranged and operating in the manner and for the purpose set forth.

RE-ISSUE

EXCLUDING DUST FROM RAILROAD CARS—By Ed Hamilton, of Bridgeport, Conn., (assignor to H. B. Goodyear, administrator of Nelson Goodyear, deceased), patented May 27, 1851: I claim inducing outward currents of air through the windows of railroad cars, to prevent the entrance of dust, &c., by the action of the surrounding air on deflectors, combined with the sides of the car, substantially as set forth.

DESIGN.

SEWING BIRD—By Chas. Waterman, of Meriden, Conn.

Motive Power Without Fuel.

Among the many wonderful discoveries of the age, the Genoa correspondent of the "Newark Advertiser" notes that a complete revolution in the means of steam navigation and locomotion, is anticipated from a recent invention by Carosio, of that city. He has, it is said, succeeded in constructing an apparatus for the decomposition of water by electro-magnetism, which will introduce the gases thus generated into the engine, in a way to save all the expense of fuel! His invention has been approved by savans and practical engineers and a company has subscribed the means of giving it a full experiment. Means have also been adopted to secure patents in all other countries. Mr. J. B. Musso, a respectable merchant of Genoa, has started for the United States, with letters from our Minister at Turin, to the heads of the Patent Office at Washington.—[Exchange.

[This power is to beat the Ericsson all hollow; but why not apply the magnetism to drive the engine instead of the gases which it produces. Magnetism is a motive power.—How sharp some people are; the above invention is like using a steam engine to pump up water to drive a water wheel.

Riddle's Report of the Great Exhibition.

[Continued from page 182.]

MANURES.—The subject of manures is treated somewhat extensively, and as it is one of great importance to our farmers, and as we have a great many subscribers amongst our agriculturists, we will continue this subject from week to week, until it is completed, in order to have the subject finished about the period when spring cultivation opens.

Every substance which has been used to improve the natural soil, or to restore to it the fertility which is diminished by the crops annually carried away, has been included in the name of manure. It is well known to all practical agriculturists that the texture of the soil, and the proportions of the earths of which it is composed, are the first and most important conditions of its productive powers. Where there is a good natural loam, which retains moisture without being overcharged with wet, and permits the influence of the atmosphere to pervade it, the crops cannot fail to be more certain and remunerating than in loose sand, or tenacious clays; but at the same time it is equally true, that the best texture of soil will not produce good crops for any length of time without the help of manure, to recruit the loss produced by vegetation.

The methods employed in the cultivation of land are different in every country; and when we inquire the cause of these differences, we receive the answer that they depend upon circumstances. No answer could show ignorance more plainly, since few have ever yet devoted themselves to ascertain what these circumstances are. Thus, also, when we inquire in what manner manure acts, we are answered that the excrements of men and animals are supposed to contain an incomprehensible something which assists in the nutrition of plants, and increases their size.—This opinion is often embraced without even an attempt being made to discover the component parts of manure, or to become acquainted with its nature.

In addition to the general conditions, such as heat, light, moisture, and the component parts of the atmosphere, which are necessary for the growth of all plants, certain substances are found to exercise a peculiar influence on the development of particular plants. These substances either are already contained in the soil, or are supplied to it in the form of substances known under the general name of manure. But what does the soil contain, and what are the components of the substances used as a manure? Until these points are determined, a rational system of agriculture cannot exist. The power and knowledge of the physiologist, agriculturist, and chemist must be united for the complete solution of these questions.

The general object of agriculture is to produce, in the most advantageous manner, certain qualities, or a maximum size, in certain parts or organs of particular plants. Now this object can be attained only by the application of those parts or organs, or by supplying the conditions necessary to the production of the qualities desired.

The rules of a rational system of agriculture should enable us, therefore, to give to each plant that which it requires for the attainment of the object in view.

As the composition of soils forms an important feature in the profession of agriculture, it will be our duty to explain, as briefly as possible, some of those which have the most distinct characters from their connections with different geological formations.

There are various modes of distinguishing soils without entering into a minute analysis of their component parts. The simplest and most natural is, to compare their texture, the size and form of the visible particles of which they are composed, and to trace the probable source of their original formation from the minerals which are found around or below them. The science of geology is of great utility in aiding us to compare different soils and ascertain their composition.

The soils which are immediately derived from those rocks, in which no traces of organic remains are to be found, consist either of visible fragments of hard minerals, which are not affected by exposure to air or water, or of minuter particles of the same, of which the shape is not readily distinguished by the naked eye. When they are altogether composed of visible particles and stones, the water readily passes through them; and unless they are kept continually moist by a regular irrigation, without any stagnation of the water, they are absolutely incapable of sustaining vegetation.

It is seldom, however, that any gravel or sand does not contain any portion of earth or other matter, of which the particles become invisible when diffused through water, and to which we will here give the name of impalpable substance. A certain portion of this finer part of the soil, and its due admixture with the coarser, especially where there is some regular gradation of size, and no stones of too large dimensions to obstruct the instruments of tillage, may be considered as essential to fertility.

The soils which have been formed from the disintegration and decomposition of the primitive rocks, such as granite, basalt, or limestone, and those which contain all these minerals minutely divided and intimately mixed, are always naturally fertile and soon enriched by cultivation. The hard particles of quartz maintain a certain porosity in the soil, which allows air and moisture to circulate, while the alumina prevents its too rapid evaporation. The silicate of potash is highly favorable to the vegetation of those plants which contain silica in their stems; in fact silica is present in the ashes of nearly all plants, having entered the plants by means of alkalies.

The primitive limestone, which is very hard, is yet gradually decomposed by the action of air and water, being in a very small degree soluble in the latter. The water which flows through these rocks is soon saturated; but when it springs out and comes to the light, the carbonate of lime is deposited by the evaporation of the water, and if this meets with the clay which results from the decomposition of the slate, it forms a marl, which, naturally or artificially added to silicious sand, forms the basis of a very good soil, particularly well adapted to pasture.

The soils, which have evidently been formed from the rocks, which are supposed to be of secondary formation, are fertile according to the proportion of the earths of these rocks, which they contain. It is of these chiefly that those loose, sandy soils are formed, of which the particles appear as distinct crystals, easily distinguishable with the aid of a lens, or even by a naked eye. Air and water have been the chief agents in the decompositions of those secondary rocks called sandstones, and agitation in water has washed from them the finer portions which have remained suspended. The immense sandy plains which are for the most part barren, have probably once been the shores of the sea, from which the waves have washed all that portion which was impalpable and easily suspended in water, depositing this in the depths, which, by some convulsion in nature, may some time or other be raised above the level of the waters, and form hills or plains of clay.

Argillaceous earth exists, in some proportion, in almost every rock. Some of the hardest gems are chiefly composed of alumina. It has the property, when mixed with other substances, as silica or lime, of fusing into a stone of great hardness and insolubility. In this state, its effect on the soil is not to be distinguished from that of silica; and by burning common clay, or clay mixed with carbonate of lime, a sandy substance is produced, resembling burnt brick, which tends greatly to improve the texture of those clays which contain little or no sand in their composition. It must be remembered that the stiffest clays contain little or no sand in their composition. It must be remembered that the stiffest clays contain a large portion of silica in an impalpable state; but this, instead of correcting their impermeable and plastic nature, rather adds to it. It is only palpable sand, which, with clay, forms what is commonly called loam, and which, when the sand is in due proportion with a mixture of organic matter, forms the richest and most easily cultivated soils. Some of the rocks of secondary formation contain a considerable portion of alumina and lime; and when these earths meet with crystallized sand, a compound, or rather a mixture, is formed, which has all the requisite qualities, as to texture, to produce the most fertile loams. The only deficiency is organic matter; but this is so readily accumulated wherever vegetation is established, or can be so easily added artificially, that these loams may be always looked upon as the most favorable soils for agricultural operations, and if a considerable depth of loam is found, which neither retains water too long nor allows it to percolate too rapidly, it may be looked upon as a soil eminently capable of the highest degree of cultivation. It is known that the aluminous minerals are the most widely diffused on the surface of the earth; and all fertile soils, or soils capable of culture, contain alumina as an invaluable constituent. There must, therefore be something in aluminous earth which enables it to exercise an influence on the life of plants, and to assist in their development. The property on which this depends is that of its invariably containing potash and soda.

Destruction of Moose and Deer.

The destruction of deer in the eastern counties of Maine for two or three years past has been immense. Not less than six thousand deer have been killed in the counties of Penobscot, Hancock, and Washington, within the last year. Five thousand skins were purchased in Bangor alone. Hunters from other States come in at all seasons, and in many cases apparently for mere sport, and often reserving only the skin as a reward or a trophy. During the present winter loads after loads of carcasses or of saddles of deer have been brought into the Bangor market.

Those interested in the matter, the settlers in these counties, feel that at the present rate of destruction, the moose and deer will soon be annihilated in Maine. They are bestirring themselves in the matter of their protection by getting up petitions to the Legislature, asking for a law imposing a fine upon every person who shall kill a moose or deer between the first day of January and the first day of September. The Legislature, says the "Bangor (Maine) Whig and Courier," will doubtless attend at once to this application, and provide a stringent law for the protection of these animals, and secure to the State a greater benefit than is now derived from their indiscriminate and wanton destruction.

Ingenious Invention---Ship's Indicator.

Z. A. Wagner has invented an apparatus for ascertaining the speed of vessels at sea, which appears to possess much merit, and is certainly an excellent substitute for the old fashioned log and line. A brass blade about six inches long, is placed at the side of the keel, which, when not in use, is folded close against the keel, and presents no resistance to the water. By means of a rod passing through a tube to the cabin or captain's state room, it connects with a dial plate. The apparatus is thrown into gear whenever the captain is desirous of knowing the rate at which the vessel is going, which turns out the blade, so that the whole resistance of the water is thrown against it, and the exact speed is shown by a hand traversing the dial. The apparatus already made, to be affixed to the sailing yacht White Lily, goes as high as twelve knots, but it can be increased to any number necessary. The importance of knowing to a fraction the rate at which a vessel is going, in order to guide the captain in his calculations, cannot be too highly appreciated.—[Exchange.

The above invention is not new. For an illustrated description of the same thing see page 57, Vol. 6, Scientific American.

The Great Silk Workshop.

Lyons is the great silk workshop of Europe. The large amount of silk fabrics is manufactured mostly by families and individuals in their own dwellings, for, and by contract with, the large dealers or commissioners.—Many of these last are exporting houses, and many of them associated with houses in the United States.

The stocking makers of Paris have presented the Emperor an address of thanks for making the men wear long stockings.