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(Illustrated articles are marked with an asterisk.)

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SCIENTIFIC AMERICAN SUPPLEMENT

No. 673.

For the Week Ending November 24, 1888.

Price 10 cents. For sale by all newsdealers.

ANOTHER COLLISION BETWEEN OCEAN STEAMERS.

On the 10th inst., at noon, a collision took place near Sandy Hook, the entrance to New York harbor, between the large Cunard steamer Umbria, outward bound, and the Iberia, a smaller trading steamer, inward bound. The accident took place at noon, during a fog. The Umbria struck and completely cut off the stern part of the Iberia; but the latter continued to float for nearly thirty hours, and then sank. No effort appears to have been made to tow the wreck into port, although there was ample time to do so. No lives were lost. The blame is charged upon the Umbria, owing to her dangerous speed at the time—17 knots per hour.

Accidents of this kind are of frequent occurrence. They seem to emphasize the importance of adopting proper means for their prevention. These means exist, and their employment should be made compulsory by law, if owners will not voluntarily put them into use.

In our paper for Sept. 14, 1886, we gave illustrations of the steamer Florence, then as now engaged in navigation in this harbor. The boat is provided with the marine brake, a device consisting of a couple of extra rudders hinged so as to fold under the stern, but capable of instantaneous action, and opening by the mere pull of a trigger in the pilot house. These brakes have a most powerful effect. In the trials made by the government engineers, they certified that the boat when running at full speed was stopped in 22 seconds, and in a space of less than her length. When the engine was backed at the same time the brakes were sprung, the vessel was stopped within a distance of 35 feet, and made to move back, all within the time of 12 seconds.

In view of remarkable facts like this, it would seem to be manifestly to the public interest that thorough trials of these devices should be made on some of our war vessels. We hope the matter will receive attention when Congress meets, and that a suitable appropriation will be made. The subject is one of great importance. Hardly a collision can be named but might have been prevented had the apparatus been in use. A glance at the engraving on our present first page shows what every steamer is liable to, by collision, which ordinarily sends them to the bottom.

TORPEDO AND OTHER FAST SHIPS.

In the SCIENTIFIC AMERICAN of November 3 last we gave illustrations of the new American torpedo boat Vesuvius, which carries the novel pneumatic guns and discharges torpedoes loaded with nitro-glycerine. We learn that on a recent trial trip the Vesuvius attained a speed of 27 miles per hour. If this is so, our navy department is at last to be congratulated in soon possessing one vessel, small though it is, capable of steaming about as fast as any other in the world. A new torpedo boat, called the Empong, built in England, has lately been delivered to the Dutch government. 1,200 h. p. Speed on trial trip, 27½ miles per hour. Built by Yarrow & Co., and provided with Yarrow's water-tight ash pan arrangement, which may be briefly described as follows:

In torpedo boats, owing to their narrowness of beam in order to secure speed, it is essential that all the weights be kept as low as possible to insure stability, and for this reason the grate must of necessity be very close to the bottom of the hull; consequently a very small amount of water entering the stokehole, from damage through shot or accident, is enough to extinguish the fire, thus leaving the boat helpless. By the above system the entire fire box and furnace is inclosed, as it were, in a complete envelope or casing, the upper part of which extends well above the water line, and all the air required for combustion has to pass over the top edges of this casing before finding access to the furnace. It will be evident that, if the water gain access to the boiler compartment, and if the pumping arrangements fail, or are not sufficiently powerful to keep it under, it will rise inside the boat to the same level as the surrounding water, but in spite of this the air supply to the furnace will be free, and the fire can be maintained burning. It has been found by actual experiment that in such a contingency, and after the firemen have been driven out of the stokehole, the boat will maintain its steaming powers for a run of four hours, at an eleven knot speed, which might enable it either to reach a port or elude capture by the enemy.

Our new ships of war now in process of construction are being built, for the most part, after English plans and drawings, not of the most recent date. Their speed will be considerably less than some of the latest German and French vessels. This is to be regretted, as it is now generally admitted in naval circles that high speed, the highest attainable, is the first requisite for the modern man-of-war. The ship must be equal in speed to anything that can be brought against her, otherwise the adversary has a striking advantage.

As an example, take the armored turret cruiser Maine, the construction of which has been commenced at the Navy Yard in Brooklyn. This ship is to be of 6,650 tons, 310 ft. long, 57 ft. beam, 8,750 horse power, calculated speed 19½ miles per hour. How slow and old-fashioned this boat is likely to be will be understood in view of the fact that the Germans already have afloat such vessels as the armored cruiser Greif, 2,000 tons, 5,400 horse power, speed 23 knots, or almost 27 miles per hour.

Domestic Animals as Vehicles of Infection.

It is reported from Chicago that a by no means inconsiderable local outbreak of scarlatina has been brought about by a cat, which acted as the means of conveying the infection. It has long been known that almost anything which can serve as a vehicle for carrying the desquamating epithelium of scarlatina patients may act as an intermediary between sick and healthy; and although recent study of the specific fevers tends to show that the period in which these diseases are most likely to be communicated is the acute stage rather than that of convalescence, it must be admitted that some of these diseases can be conveyed by such methods as the reception and subsequent discharge of infectious material from the coat of a cat nursed by patients. But that anything like an outbreak of scarlatina should be directly brought about by such a cause is contrary to experience, which goes to show that this disease is not often communicated from one person to another through the agency of a third party who is free from the disease; and it is far more probable that any extension of scarlatina in the case referred to was due to infection contracted directly from the first person to whom the disease was conveyed. But our main object in referring to the incident is to draw attention to the fact that the domestic animals do constitute a distinct danger to man, in so far as some of the specific infectious fevers are concerned. As yet we know nothing about any disease in the cat which can lead to scarlatina in the human subject. But it is probably highly different as regards diphtheria, for a number of instances have been placed on record in which, while diphtheria has been prevalent in the human subject, a similar if not the same disease has been ascertained to exist among cats, and it is certain that in some prevalences there has been close association between the human sick and the affected animals.

We are at present only just on the borderland of a wide subject—namely, that of the relationship of diseases of the lower animals to diseases in man; and we may possibly learn hereafter that, apart from the origin of infective diseases in the lower animals, the latter may serve as media for communicating infections to an extent as yet not understood. Certain it is that the manner in which dogs, cats, and other domestic animals are at times fondled by those to whom they belong, and to whom they become attached, is not free from risk.—*Lancet.*

The New War Ship Maine.

At the Navy Yard, Brooklyn, N. Y., work has been commenced on the construction of the twin-screw armored turret cruiser Maine, and immense amounts of material and plant have been delivered. This vessel, the largest ever built at the Brooklyn yard, will be of 6 650 tons, and in general appearance will resemble the Brazilian cruiser Riachuelo, but will be larger and more fully equipped. The ship was designed by Commodore T. D. Wilson, Chief of the Bureau of Construction and Repair, and his plans were accepted after considerable discussion and investigation. The Maine will be 310 ft. long between perpendiculars, 57 ft. beam, 21½ ft. draught, built of steel, with cast steel stem, stern, post and rudder frame. There will be 174 water-tight compartments, and even should the extremities above the under-water steel protective deck be shot through and through, the remaining buoyancy would be sufficient to insure floating and fighting capability. The armor belt will be 11 in. thick. The main battery will consist of four 10 in. guns, throwing 500 lb. projectiles, mounted in pairs, in turrets 10½ in. thick, also six 6 in. rifled guns. The guns can be fired directly ahead and astern, and the latest appliances for handling them will be fitted. The secondary battery consists of twenty-one Hotchkiss rapid-firing and revolving guns and four Gatling guns, grouped to secure a heavy concentrated fire. There are also to be four torpedo launching tubes above water and three below, but the type of torpedo is not yet determined upon. The engines will be of 8,750 horse power, capable of driving her at seventeen knots an hour, and she will have great coal-carrying capacity. She will be bark-rigged, with armored tops, and will carry a complement of 30 officers and 444 men.

Naval Volunteer Defense.

A public meeting was lately held at Brighton, presided over by the mayor, in support of the Naval Volunteer Defense Association. Earl Cowper, as president of the association, gave an address, in which he explained its objects in detail. He said it was started three years ago, when there were grave fears of the possibility of a war with Russia, and their object was to organize and encourage local volunteer efforts in the defense of the coasts. If in the time of war privateering were to be again introduced, the consequence would be most serious. The best means of defense was to have quick-firing guns on fast steamers.

The United States vs. the American Bell Telephone Company.

AN IMPORTANT DECISION BY THE SUPREME COURT.

When the present administration came into office in 1885, among the eminent men whom President Cleveland selected for his cabinet was the Hon. Augustus H. Garland, of Arkansas, who was appointed Attorney-General, and he still exercises the high functions of presiding officer over the Department of Justice.

A few weeks after the new minister had taken his seat, it was announced that under the authority of the Department of Justice a suit had been instituted by the United States government against the American Bell Telephone Company, to recall, repeal, and annul Bell's telephone patent 174,465, granted March 7, 1876, on the ground, among other things, of fraud in the issue of the patent.

It was then also made public that the Hon. Mr. Garland, the Minister of Justice, was interested to the extent of one million dollars as proprietor in the stock of the Pan-Electric Telephone Company, the instruments used and belonging to the company being the patented inventions of J. Harris Rogers, granted in 1881. These instruments were claimed by the Bell people to be infringements on the Bell patent, and the Bell company had at this time brought suits and sought to obtain an injunction to prevent the further use of the instruments. In one of these suits one of the reasons alleged by the defendants why the injunction ought not to be granted was that the United States government had begun a suit to annul the Bell patent. Nevertheless, the circuit court granted the injunction.

The same lawyers that acted for the Pan-Electric Telephone Company, in which Attorney-General Garland was so heavily interested, were by his authority to act for and on behalf of the United States government in prosecuting the suit against the Bell Telephone Company, and since that time this fight against the Bell company has been carried on at the expense of the United States, the Pan-Electric lawyers being paid out of the treasury of the United States.

Such in brief is a sketch of the origin and pushing of the suit in which the United States government stands as the plaintiff and the American Bell Telephone Company is the defendant.

After sundry legal delaying dodges on the part of the Bell company the case was brought to a hearing in the United States Circuit Court in Massachusetts, before Judges Colt and Nelson. The main charge presented on the part of the government was that Bell's patent was procured by fraud and that Bell was not the first inventor of the telephone.

The Bell company, through its attorneys, waiving for the time any answer to the allegations made in the government's bill in equity, filed a demurrer, in which they asserted that the United States had no right, in the absence of a specific statute granting that power, to bring a suit to cancel a patent for an invention. They declared that such a suit could only be brought by a private party, and not by the government. The Circuit Court sustained the Bell company's demurrer, and refused to entertain the government's bill. From that decision the United States took an appeal to the Supreme Court, which, on November 12, 1888, through Justice Miller, reversed the decision of the lower court in a long and elaborate opinion, from which we make the following extracts :

After a review of the case, the opinion says that the defendant demurs generally to the whole bill, and in that demurrer objects to specific portions of the bill, and it may be very doubtful whether these are not so mixed up in the same pleading as to make the demurrer void so far as it relates to such parts of it. As the main questions in the demurrer, however, relate to matters which go to the merits of the whole bill, they are probably all that it is necessary to consider here. The court then takes up the three grounds of demurrer. The first ground, the question of multifariousness, the court does not think needs much consideration.

The court, then, skipping for the time being the second ground, takes up the third ground of demurrer, which is that the bill does not set forth any fraud in the procuring of said patents. On this point the court says that the bill alleges that Bell knew at the time of filing his application for the patent of March 7, 1876, that he was not the first inventor, as the law required he should be ; that the statements made by Bell in his application constituted deception and fraud upon the government, and did deceive complainant and cause complainant to deliver the patent to Bell, which would not otherwise have been done ; that in his application Bell misled the Patent Office by a statement that his invention was for "an improvement in telegraphy," and especially for a patent for a method of "multiple telegraphy," and that he carefully and intentionally refrained from any expression which would lead to the idea that his invention was to be used as a telephone or was capable of such use. The bill also described certain discoveries which anticipated Bell's patent, and which it is declared rendered it void, and further states that he practiced fraud upon various named persons.

The court is of opinion that if Bell was aware at the time he procured his patents that the same matter had been previously discovered and put into operation by other persons, he was guilty of such a fraud upon the public that the monopoly which these patents grant to him ought to be revoked and annulled. The fraud alleged, it says, is precisely the fraud which would be committed in a case of the kind set forth. It is the fraud of obtaining a patent for an invention of which the party knew he was not the original inventor. This priority of invention is absolutely necessary to the right to have such a patent granted, and can in no case be dispensed with.

There can be no question that if the bill be taken as true, there is enough in it to establish the fraud in the procurement of the patent and to justify its cancellation if the court has jurisdiction to do so.

The court then proceeds to take up the most important feature of the demurrer, the second ground, which alleges that the bill does not show any power or authority, and that no power or authority in law exists, in any person or party or any court, to bring or entertain the suit.

It will be observed, says the court, that this broad assertion admits that a party may practice an intentional fraud upon the officers of the government who are authorized and whose duty it is to decide upon his right to a patent, and that he may by means of that fraud perpetrate a grievous wrong upon the general public, upon the United States, and upon its representatives. It admits that by prostituting the forms of law to his service he may obtain an instrument bearing the authority of the government of the United States entitling him to a monopoly in the use of an invention which he never originated or a discover which was made by others, and which, however generally useful or even necessary it may become, is under his absolute and exclusive control, either as to the use it may be put to or as to the price he may charge for it during the life of the grant.

It assumes that the government, which has thus been imposed upon and deceived, is utterly helpless, and that it can take no steps to correct the evil or to redress the fraud. If such a fraud were practiced upon an individual, he would have a remedy in any court having jurisdiction to correct frauds and mistakes and to relieve against accident, but it is said that the government of the United States—the representative of sixty millions of people, acting for them, on their behalf, and under their authority—can have no remedy against a fraud which affects them all and whose influence may be unlimited.

It would be a strange anomaly in a government organized upon a system which rigidly separates the executive, legislative, and judicial branches to hold that in that department there should be no remedy for such a wrong. In the case of land patents this court has repeatedly held that the circuit courts of the United States have jurisdiction to set aside land patents for fraud. These cases establish the right of the United States to bring suits in its own courts to be relieved against fraud committed in cases of a class exactly similar to that charged in the present case. It is also to be observed that in those cases there is no express act of Congress authorizing such procedure. Furthermore, there is a striking similarity in the language of the Constitution relating to patents for invention and for land. The powers, therefore, though exercised by different officers, are of the same nature, character, and validity.

The court then proceeds to a consideration of the objection raised by the Bell company that such a proceeding as the present one must be brought in a common law court and not in a court of equity. The elaborate argument of the counsel for Bell to show that the English course of procedure, upon which our judicial system is based, required that the case should be brought in a common law court is reviewed, and issue is taken with the conclusion reached by the Bell company's lawyers. The course of English jurisprudence, however, the court says, can have little force in limiting or restricting the measures of the government of the United States. There is in this country no king. No man possesses a prerogative right, and patents do not proceed from the President, but from the United States. The seal by which patents are made valid is that of the Patent Office, as authorized by Congress, and is not that of the President. The granting of a patent is a quasi-judicial proceeding, not subject to be repealed by the President, the Secretary of the Interior, or the Commissioner of Patents when once issued. If an application for a patent is denied by the Commissioner of Patents, the case may be taken to the Supreme Court of the District of Columbia by authority of a statute of Congress, and the court has authority to compel the issuance of a patent. The United States, in the present case, is under an obligation to protect the public from the monopoly secured under a patent alleged to have been procured by fraud.

The United States by issuing the patents to the Bell company sought to be annulled has taken from the public rights of immense value and bestowed them upon the patentee. The government and its officers, acting as the agents of the people, have taken from them valuable privileges and conferred them upon the patentee. These privileges constitute a property so large that nobody has been able to estimate its value. In argument it has been stated at $25,000,000. This property has been taken from the public and conferred upon the patentees by one of the departments of the government under the forms of law, but it is charged to have been done because the officers of the government were deceived and misled by the patentee. That the government, authorized both by the Constitution and the statutes to bring suits at law and in equity, should find it its duty to correct this evil, to recall these patents, and to give a remedy for this fraud is so clear as to need no argument, and the proper remedy, it seems to the court, is the one adopted by the government in this case.

In conclusion, the court says : We think the doctrine that the United States is not entitled to obtain the cancellation of an instrument obtained from it by fraud—an instrument which affects the whole public, whose protection from such a fraud is eminently the duty of the United States—is not sound. The decree of the circuit court of Massachusetts dismissing the government's bill is, therefore, reversed and the cause remanded to that court with directions to overrule the demurrer, with leave to the defendants to plead or answer, or both, within a reasonable time to be fixed by that court. Opinion by Justice Miller.

There was a large crowd present in the court room in anticipation of the decision in this case. A great deal of interest has attached to the case, and both sides have been represented by an able array of counsel, Judge Thurman, Solicitor-General Jenks, and Jeff Chandler being among the attorneys representing the government, while Messrs. Storrow and Dickerson, who have represented the Bell company in all its litigation for years, appeared in behalf of the telephone company.

The stock of the American Bell Telephone Co. fell several points on the market as soon as the result of the decision was made known. It is claimed by the Bell people that all the evidence which it is possible for the government to produce against the Bell patents has been already heard by the Supreme Court and decided to be of no value ; such, for example, as the prior invention of the telephone by Reis, Gray, Holcom, Meucci, Drawbaugh, and others. This may be true, and yet it by no means follows that the court may not reach a different conclusion if a new, more clear, and better presentation of the evidence can be had. The Bell folks were sure of a favorable decision in the present case ; but instead thereof met with an ignominious defeat.

There is, moreover, one item of new evidence which is likely to be brought forward as bearing on the subject. We allude to the patent granted to Royal E. House, May 12, 1868, for a phonetic telegraph nearly eight years prior to Bell's patent. These devices are constructed upon the same principle ; in both of them the famous "undulatory current" is found, and even the form of apparatus employed by the respective inventors is very nearly the same. If we throw aside the earlier Reis telephone, then House was the prior inventor of the device shown by Bell, and was entitled to the broad claim granted March 7, 1876, to Bell, namely :

"The method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth."

House's prior instrument is capable of vocal transmission just as described in Bell's above claim ; and if this is so, it necessarily follows, the issue of said claim to Bell was illegal, and therefore must be held to be void.

Patent Law in America.

At a recent meeting of the Inventors' Institute, London, the chairman, Admiral Selwyn, stated that the American government prosecuted and punished men who infringed patents, and the inventor was put to no expense in the matter. The admiral is sadly mistaken, as our inventors know by sad experience. In this country the inventor is obliged to prosecute infringers at his own expense, and the way the prominent patent lawyers pile their charges upon him is frightful. Patent law business in this country is a most profitable branch of the legal profession. Every patent lawyer of any note is rich and enjoys a large income.

IN Philadelphia the Bell Telephone Company is building a conduit three feet wide through the main streets and avenues of the city, which will contain fifty 3 inch iron pipes and fifty wooden tubes laid in cement, with a capacity of 100 wires each, a total of 10,000 wires. Connection will be made with each block by a branch running from a main conduit to the middle of the block, and in nearly all the blocks there are small streets and alleys in which the distributing poles can be conveniently erected, leaving the main streets entirely free from wires.