

tion in a northerly direction almost the only thing sought for. At least, this is the opinion of many scientists, including such men as Professor Loomis of Yale College and Professor Henry of the Smithsonian. Of the practicability of the colony scheme as a means of geographical discovery we may say that it was brought forward as long ago as 1868, by Dr. Hayes, the Arctic explorer, who still believes in it; that it was a favorite idea of Captain Hall, who would, no doubt, have endeavored to carry it out had he lived; and that the survivors of the *Polaris* expedition all indorse it. As to discoveries and researches in other sciences Professor Henry gives the following as some that would and should be made by such expeditions: Pendulum experiments, to better determine the shape of the earth; a greater number and more continued observations for the more perfect elucidation of the magnetism of the earth; a series of observations on the tides for at least a year; and the results of a larger series of observations on the winds of the globe than those now possessed are necessary for completing our knowledge of that subject. Besides these particular observations the Professor thinks that the whole field of natural history could be enriched by collections in the line of botany, mineralogy, geology, etc., and many facts of interest obtained with regard to the influence of extreme cold on animal and vegetable life.

In view of these reasons, and others which our space forbids us to give, the House Committee on Naval Affairs have reported a bill authorizing the formation of a colony on the Howgate plan on or near the shore of Lady Franklin Bay, near where a seam of coal has been discovered. Strong substantial buildings are to be carried there, and the colonists are to be furnished with provisions and other necessaries for three years. The scientists accompanying the expedition, who are to be under the direction of the National Academy of Sciences, are to be provided with all the necessary appliances for scientific discovery, including telephonic lines for maintaining communications between successive stations, and balloons for purposes of observation. It is thought that the colonists will gradually become acclimated, and by training the natives to help them will thus be enabled to push forward into regions hitherto unknown by taking advantage of such favorable seasons as may occur. Whether they will succeed or not remains to be seen. All that we can say is that if the secrets of the far north are to be discovered, this plan seems more feasible than any before brought forward.

WHAT STEAM HAS DONE FOR FRANCE.

According to recent official statistics the total power of all the steam engines existing in France is 1,500,000 horse power, representing the actual labor of 4,500,000 horses or 31,500,000 men. This last aggregate is equal to ten times the present industrial population, which amounts to 8,400,000 souls, but from which must be subtracted old people, women, and children, leaving a remainder of 3,200,000 working men.

It is interesting, says *La Nature*, to compare the above data with the condition of affairs in 1788, before steam engines were introduced in France, as we are thus led to appreciate the enormous revolution which steam and improved machinery have produced. Just ninety years ago in every \$200,000,000 worth of French products, sixty per cent of the value represented labor and forty per cent raw material. Today this ratio is exactly reversed, although labor has increased forty per cent. At the present time the total industrial productions of France aggregate a value of about \$2,400,000,000. Of this \$1,400,000,000 represents raw material, and the remainder labor. If the same proportion as existed in 1788 applied now, taking into account the increase in labor noted above, no less than eleven twelfths of the above amount, or \$2,200,000,000, would be the cost of handwork. Roughly, then, steam engines and improved tools have produced an economy of \$1,200,000,000; but more than this, if they were suddenly swept out of existence and forgotten, there are not enough men and animals in the country to supply an equivalent amount of power, and even if there were, there would be no way of procuring the necessary food for their support.

IMPROVEMENT OF RIVERS.

A detailed statement of the losses of property on Western waters during the year 1877, owing to obstructions in the various large rivers, shows that it reached the large sum of \$5,330,000. On the Mississippi river the greatest loss is sustained between St. Louis and Cairo, at the mouth of the Ohio. Here the river is shallow, and snags are frequently found imbedded in the river, upon which occur wrecks that themselves form further obstructions. The Red river is one upon which the Government has spent much money and labor in order to cut a channel of sufficient width to afford easy navigation; but where the channel was cut through the passage has been obstructed by jams of logs and driftwood. A bill providing for the removal of obstructions from there, as well as from the Missouri and Arkansas rivers, was passed a few days since. The first section of the bill appropriates the sum of \$60,000, to be expended under the direction of the War Department, for the removal of snags, etc., from the Mississippi, Missouri, and Arkansas rivers, and for the preservation of Government vessels in that service. The second section appropriates \$6,000, to be expended under the direction of the War Department, for the purpose of opening the navigation of the Red river above Shreveport and keeping said navigation open and free from rafts. Bills have since been in-

roduced providing for the improvement of the Osage, Detroit, Galena, and St. Mary's rivers; referred to the Committee on Commerce and ordered printed. On the 5th of December, pursuant to a call from the Governors of Tennessee, Alabama, Kentucky, Mississippi, and Ohio, a convention met at Chattanooga for the purpose of perfecting measures and making an earnest and united appeal to Congress for a sufficient appropriation to secure the completion of the improvement of the Tennessee river, especially at the Mussel Shoals, at as early a date as possible. The committee appointed by this convention has presented a memorial to Congress of very great importance. It sets forth that the Tennessee river is navigable for steamers of from four to five feet draught, the year round, a distance of 330 miles from its mouth to Florence, Alabama; that a section extending a distance of 38 miles above Florence is obstructed by a series of impediments known as Mussel Shoals; that the river is further navigable for steamers of three feet draught from the head of Mussel Shoals to the city of Knoxville, a distance of 389 miles, for nearly nine months annually; that this vast region, although possessing all the latent elements of prosperity, languishes for cheap transportation. It therefore urgently asks for the improvement of the river, especially at Mussel Shoals, as a work of national importance, required as a commercial highway and as a ligament to bind together the States commercially and politically. The memorial was ordered printed and referred to the Committee on Commerce.

PRINTING THE PATENTS.

While we agree with so much of Commissioner Spear's recommendation relative to printing patents which states that it would be desirable in point of cheapness, convenience, and rapidity, if the work of printing could be done in the Patent Office instead of in the Government Printing Office, we do not coincide in the suggestion to increase the final fee by adding thereto the cost of printing the patents. It is proposed to graduate this tax in accordance with the length and complexity of the specification.

Our objection is that under this arrangement the Government would be paid twice for the same extra printing, first by the inventor and second by the public, as the charge to the latter for copies of patents is also to be increased with their length, etc. It would be less objectionable to charge only purchasers of copies of patents the extra price; but this might necessitate a relay of clerks to calculate the various costs. The result would be useless and unprofitable labor. The aim should be to reduce the present charges, not to increase them. The present uniform rate asked for copies of patents has proved satisfactory and remunerative. If any change is to be made in the price, let us lessen it.

THE CARBOLIC ACID OR ANTISEPTIC TREATMENT OF WOUNDS.

Reports are now beginning to come in giving the results of those who have practiced Lester's new system of antiseptic treatment of wounds, and Dr. Robert F. Weir, Surgeon to the New York and Roosevelt Hospitals, has communicated to the *New York Medical Journal* the result of some 56 cases in which Mr. Lester's treatment was adopted.

As American surgeons have been slow to test this mode of treatment, and as many improvements have been suggested by Mr. Lester since its first introduction, we will briefly describe the principles involved and their mode of application. Dr. Weir presents the following synopsis of the theory:

First. That in the dust of the atmosphere, and in matter with which it is in contact, there are the germs of minute organisms, which under favorable circumstances induce putrefaction in fluids and solids capable of that change, in the same manner as the yeast plant occasions the alcoholic fermentation in a saccharine solution.

Second. That putrefaction is not occasioned by the chemical action of oxygen or other gas, but by the fermentative agency of these organisms.

Third. That the vitality or potency of the germs can be destroyed by heat or by various chemical substances, which are called in surgery antiseptics.

Lester himself describes his system as "the dealing with surgical cases in such a way as to prevent the introduction of putrefactive influences into wounds."

The general reader will not demand the whole details of the proper application of this treatment, which are presented with much care by Dr. Weir. The leading points, however, may be interesting:

The antiseptic medium employed is carbolic acid, used in solution of various strengths. The operation is performed while the air surrounding the limb is impregnated with carbolic acid by means of a spraying instrument, working on the same plan as the well known perfumery spray.

Carbolic acid is forced into the wound, and during a surgical operation, such as the amputation of a limb, all the cut and exposed parts, and all textures and substances used for dressings or coverings, are thoroughly treated with the carbolic spray.

The catgut ligatures and silk sutures are also carbolicized, and even the hands of the surgeon treated with the spray.

Three solutions of carbolic acid are employed—1 to 40 for the protective layers, 1 to 30 for the spray, and 1 to 20 for a solution in which are immersed the sponges, instruments, and teeth of forceps.

This latter solution is also used to wash the epidermis of the patient adjacent to the wound, the hands and particularly the finger ends of the surgeon.

To work the spray, Mr. Lester has devised a steam spray apparatus, operated by a spirit lamp.

The results that have been obtained from this mode of dressing wounds must necessarily be of absorbing interest to surgeons. Dr. W. H. Van Buren, of this city, in a recent address to the students at Bellevue, stated that he considered it the greatest advance in surgery since the introduction of anesthetics.

The experience of Dr. Weir comprises about five months of hospital practice, and he considers it the duty of every one having the charge of hospital cases to diligently try it.

In Chambers Street Hospital in 16 cases 8 were failures; an explanation was, however, found for this apparently moderate success, it having been found that from motives of economy the larger pieces of gauze had been washed and recarbolized. This had been poorly done, for when an investigation was made as to why the dressing had failed, the gauze was found to have been imperfectly cleaned and unfit for use.

At the New York and Roosevelt Hospitals the result of 26 cases showed but 6 instances of failure. These cases were chiefly in Dr. Weir's own wards and under his own observation, and he states that even in these 6 cases of failure, retrospection detected some imperfectly followed detail which accounted for the unfavorable condition of the wounds.

THE WASHINGTON NAVAL OBSERVATORY.

Some days ago a petition from Professor Newton and others, of Yale College, was offered, calling the attention of Congress to the present unfortunate location of the Naval Observatory, and asking for such legislation as will authorize its early removal from its present situation to a better and healthier location. Subsequent debate on the bill developed the fact that since the establishment of the Observatory (in about the year 1840) the malarial influences of the Potomac have increased to such an extent as to endanger the health and lives of those who are assigned there for scientific duty. The testimony given on the subject was abundant and conclusive.

This proposition for the removal of the Observatory has since been made the occasion to agitate another and distinct proposition, namely, that its management be transferred from the Navy Department to some other branch of the government, or else that it be made a separate institution under the entire control of a general superintendent. This proposition, which has no legitimate connection with that embraced in the petition before Congress, is a direct attack on the present management of the Observatory, and has called forth a circular from the professors connected with the latter, addressed to the National Academy of Sciences, asking that no member of that body place himself on record as approving of the statements contained in the document of their opponents. Thus the matter at present rests.

The Commissioner of Patents on Models.

Commissioner Spear takes very sound and sensible ground on the model question. He says in substance that the models usually forwarded with applications are unnecessary, that they always add largely to the expense, and are troublesome to keep in the Patent Office. This coincides with our own opinions already expressed. Models are a great tax on the resources of inventors; any examiner ought to be able to obtain as clear ideas as he desires through good drawings and clearly written specifications; and the late fire in the Patent Office has shown that to the dry accumulation of old models might well be applied a stronger term than troublesome. The Commissioner proposes to reserve the right to call for a model where an examiner is in doubt as to practicability of an invention. This is well enough, but there is no need of the Commissioner proposing when he has only to issue the necessary order. The law already says that "the applicant, if required by the Commissioner," shall furnish a model, etc. The Commissioner has only to break loose from mere precedent, which is not at all obligatory, establish at once the better regime that he contemplates, and so earn the thanks and commendations of his countrymen.

Restoring the Models.

The result of the attempt to restore the models damaged in the late fire bids fair to more than realize expectation. About 5,000 models have already been restored, and from present indications the whole number capable of being put in good condition will reach at least 5,000 more than the Commissioner's estimate, or about 15,000. It is doubtful, however, if the present appropriation will be sufficient for the purpose, as it is believed that it will be exhausted by the time that the restoring of the 10,000 models originally estimated for has been completed.

WHEELBARROWS FOR THE SICK.—The Police Commissioners of Dundee, Scotland, have supplied each police station with a double sprung wheelbarrow, for the transportation of drunk and incapable persons. The new vehicles are said to be more convenient and easily managed than any other conveyance that has been tried for the same purpose.

FOR the safe storage or shipment of explosives Herr Gossie, of Antwerp, constructs, either in a railway car or in the earth, a water-tight reservoir, divided by means of T and angle irons into compartments of equal capacity, in which the explosives (suitably packed in water-tight boxes) are placed after the reservoir is filled with water.