

the European coast, can be seen and studied. Professor Burt G. Wilder, of Cornell, with all the energy and enthusiasm of true genius, expressed his regret that such a storehouse of Nature was not within his reach, and begged for the dead specimens. Is there no naturalist in our city with a kindred spirit, who will collect a little band of students, and garner the rich harvest of knowledge that now neglectfully lies ready to be harvested?

Communications.

Our Washington Correspondence.

To the Editor of the Scientific American:

From the following figures, showing the issues during the months of January, 1877 and 1878, the Patent Office business appears to be still increasing:

	Patents.	Reissues.	Designs.	Trademarks.	Labels.
January, 1877.....	1,105	33	43	83	27
January, 1878.....	1,168	48	40	137	58

The office has received from the English Patent Office a duplicate set of English patents, which are to be classified according to the nature of the invention and distributed in the examiners' rooms, so that they may be more readily examined in making searches as to the novelty of alleged new inventions. It will take considerable time and money to properly mount the drawings and classify them, but when done its cost will soon be paid for by the increased facilities given the examiners in their work, and it will prevent the granting of many useless and invalid patents that would otherwise be granted for inventions already shown in foreign patents, but which cannot now be found under the present system.

The work of photo-lithographing the back issues of drawings has made considerable progress, all being now done except the following sub-classes: artificial limbs, builders' hardware, coffins, coopering, cutlery, dentistry, locks and latches, locomotives, nut-locks, safes, steam boilers, steam engines, boiler furnaces, steam valves, surgery, wheelwrights' machines, wood sawing, wood turning, woodwork, and wood working tools. These are under way, and will, it is believed, all be finished by the end of the year, so that printed copies of the drawing of any United States patent may then be readily obtained at a moderate price.

The Secretary of the Interior has prepared a communication, which will probably be sent to Congress ere this is printed, calling the attention of that body to the present condition of the roof of the Patent Office, and asking for an immediate appropriation to repair the building in conformity with the recommendations and suggestions made by the commission appointed by the President to examine into the condition of the executive departments. The recommendations of that commission were transmitted to Congress during the extrajession, but nothing has yet been done in reference to the matter, and the condition of the Patent Office calls for prompt action, in order that the structure may at an early day be restored and rendered as nearly fireproof as possible. Much of the work of the office is now done to great disadvantage from the overcrowded state of the rooms, and some that should be done in the office is now, to the great inconvenience of attorneys and examiners, done in outside buildings.

CONGRESSIONAL MATTERS.

In addition to the bills relating to the Patent law given in my previous letters, I find the following recently introduced:

House bill 2,345, introduced by Mr. Hartzell, enacts that section 4,898 shall be repealed and the following substituted therefor:

"Sec. 4,898. Every patent, design, trademark, label, or copyright, or any interest therein, shall be assignable in law by an instrument in writing which shall be acknowledged before some officer authorized to take the acknowledgment of deeds where such instrument is executed; and the patentee or owner of the franchise, or his assignee or legal representative, may, in like manner, grant and convey an exclusive right under his patent or other franchise to the whole or any specified part of the United States. Every assignment, grant, conveyance, mortgage, power of attorney, license, shopright, or any other interest in or under any patent, design, trademark, label, or copyright shall be recorded in the Patent Office of the United States; and every such assignment, grant, conveyance, mortgage, power of attorney, license, shopright not so recorded shall be void as against any subsequent purchaser in good faith, and for a valuable consideration, of the same patent, design, trademark, label, or copyright, or any interest therein, whose assignment or conveyance shall be first duly recorded. But no instrument in writing as described in this section shall be deemed invalid or void for want of such acknowledgment if executed before the passage of this act."

The House bill 2,522, introduced by Mr. Blair, adds to section 3 of chapter 301 of the Revised Statutes, relating to the registration of labels, the following:

"And the same right of proceeding against any person who has registered a label pursuant to the provisions of this section shall be allowed, from and after the date of the passage of this act, as is now allowed in relation to trademarks by act approved August fourteenth, eighteen hundred and seventy-six, and entitled 'An act to punish the counterfeiting of trademark goods and the sale or dealing in of counterfeit trademark goods.'"

Another bill (No. 2,524), introduced into the House by Mr. Briggs, will, if it becomes a law, change the fee for registering trade marks from \$25 to \$5.

Mr. Glover has introduced a bill (No. 2,607) which enacts that section 482 of the Patent law shall read as follows:

"Sec. 482. The Examiners-in-Chief shall be persons learned in the law, whose duty it shall be, on the written petition of the appellant, to revise and determine upon the validity of the adverse decisions of examiners upon applications for patents, and for reissues of patents, and in interference cases; and the Commissioner of Patents is hereby forbidden from exercising, or attempting to exercise, any power or influence over the Examiners-in-Chief in regard to the decision of cases which are before them on appeal from the primary examiners. The decisions of the Examiners-in-Chief shall hereafter be published in the Patent Office Official Gazette, in the same manner as the decisions of the Commissioner of Patents and the Assistant Commissioner of Patents are now published; and the Examiners-in-Chief shall select such of their decisions for publication as they shall deem to be of public and general interest."

A bill (No. 2,628), introduced by Mr. Sampson, strikes out from the Patent law section 4,910, which allows an appeal to the Commissioner, and changes section 4,911 so as to allow any person dissatisfied with the decision of the Examiners-in-Chief to appeal direct to the Supreme Court of the District of Columbia sitting *in banc*.

House bill No. 2,634, introduced by Mr. Oliver, proposes to amend sections 493, 4,897, and 4,911 of the Patent law, so that uncertified printed copies of patents shall be sold at an advance of fifty per centum above the actual cost of printing; that forfeited applications shall be allowed to be revived in the same manner as rejected cases now are, notwithstanding two years may have elapsed without action; and that a party to an interference shall be allowed an appeal to the Supreme Court of the District of Columbia.

In addition to these, I find a number of private bills relating to extensions of the following patents: R. & G. B. Reynolds, June 21, 1859, power loom brake; Cook & Jenkins, January 14, 1862, working siliceous and other calamine ores; H. A. Stone, March 21, 1861, making cheese; J. D. Sarven, June 9, 1857, carriage wheel; Walter Hunt, July 25, 1854, paper collars; F. Cook, March 2, 1853, bale ties; E. A. Leland, August 14, 1861, paint cans; A. B. Travis, April 8, 1862, cultivators; J. A. Conover, May 15, 1855, wood-splitting machine; J. C. Birdsell, May 18, 1858, hulling and thrashing clover; Ira Gill, January 13, 1857, machine for forming hat bodies; S. S. Hartshorn, buckles.

The House Committee on Public Buildings have decided to report favorably a bill for the erection of a building on the Smithsonian grounds to be used as a National Museum, and appropriating \$250,000 for the purpose. This building is mainly intended for the reception of the exhibits at the Centennial donated by different foreign governments to the United States, and now stored away in the old arsenal in this city until such time as sufficient room can be obtained for their proper exhibition.

The annual report of the Librarian of Congress, recently presented, shows that this important institution has made gratifying progress during the past year, so far as accumulation of material is concerned. More than 20,000 volumes, besides pamphlets, periodicals, engravings, etc., were added to its treasures. The total number of volumes is now 331,118, and of pamphlets, 110,000. The rate at which this library is increasing will soon cause it to rival the most famous ones of Europe, a prospect which must be very pleasing to all who are interested in our national progress in literature and art. Its attractions draw to this city many scholars from various cities, who find in its alcoves books not to be found anywhere else on this continent. The great drawback to it is the inconvenient and overcrowded space it now occupies, which is so small for the amount of material it contains that about 70,000 volumes are piled upon the floor for want of shelf room.

UNITED STATES PATENT VS. STATE LAWS.

A case in which the question whether or not a patent is sufficient to overrule State laws has just been argued before the Supreme Court of the United States in the case of *Patterson vs. The Commonwealth of Kentucky*; error to the Kentucky Court of Appeals. The plaintiff in error having been indicted for the sale and use of a patented illuminating compound, known as "Aurora Oil," which article had been found by the Inspector of the State, by actual test, to be unsafe for illuminating purposes, and its use prohibited accordingly by the State authorities, brings the case to the Supreme Court on the ground that the authority of the patent is superior to the laws of the State, contending that if the patent does not guarantee the right to vend the patented article the patent is worthless and the protection of the United States no assurance to capital. On the other hand, it is said that the police power of the State is supreme in all cases where the safety of its citizens and their property is concerned, and that Congress has no power to control or regulate the sale of dangerous commodities such as these oils. No decision has yet been given by the Supreme Court at the time of this writing.

BOARD OF STEAMBOAT INSPECTORS.

The Supervising Steamboat Inspectors have been holding a convention in this city, and consulting on various matters connected with steamboats. Reports were received from various members in relation to improvements in boilers, grate bars, life boats, life preservers, testing oils, and other things pertaining to their duties in connection with steamboat service and to the safety of passengers. Several addresses were made by various parties interested in the adoption of alleged improvements in various appliances con-

nected with the general subject of steam transportation. They also had an address from Mr. Boole, of Chester, Pa., connected with Mr. John Roach's iron ship-building establishment, in relation to the deviation of the compass, whose object in addressing the board was to get it to suggest to the Secretary of the Treasury to recommend the further investigation of this important matter by a board of scientists, under the auspices of the government, with a view to the establishment of some standard for the use of mariners, whereby all variations may be readily computed and allowed for in making up a ship's reckoning.

CONSULAR REPORT ON TRADES UNIONS IN ENGLAND.

Our consul at Leeds sends to the Department of State an interesting analysis of the effect which the trades unions exercise upon the industrial enterprises of Great Britain. In his judgment, the original and principal cause of the decline of British industry is traceable directly to the arbitrary regulations of those unions, the organization of which is more perfect in England than elsewhere, so much so that it is to be regretted that they are not as potential for good as they are for evil. But they are too often led by turbulent spirits, who provoke continual conflicts and demand concession after concession until the enhanced cost of production paralyzes the employers' hands, and further concession becomes impossible, which results in a strike, with all its attendant misery, most of which falls upon the innocent non-producers—the wives and children of the strikers. As long as the funds of the union hold out, a bare existence is doled out to the striker, but when exhausted, which soon happens, public charity is the only resource to allay the misery which ensues. The strikes generally end in submission, a result mainly due to the folly of the unions. Another way in which unions impede production and enhance its cost is by forbidding a mechanic of more than average skill to do more than a certain quantity of work in a given time; thus a smart bricklayer can lay no more than his slower brother unionist, lest he should therefore jeopardize his chance of obtaining work. In this and other ways the real amount of labor is lessened and made dearer, the quantity of manufactures diminished, industries paralyzed, and exports lessened, and, with the consequent decrease of profits and outward flow of capital from the country, the necessaries of life become dearer, which weighs most upon the laboring classes, and they are thus the ignorant cause of many of their own misfortunes. Almost all branches of industry suffer from this cause except agriculture, because unions and their resultant strikes are rare among farm laborers.

TECHNICAL EDUCATION.

The Commissioner of Education has returned from the Convention of Presidents of Agricultural and Industrial Colleges held at Cleveland recently, and expresses himself much pleased with the general results of the convention, which was the first of the kind ever held in this country, but he hopes not the last, as he thinks that such conventions cannot fail to promote all branches of technical education. In these matters he says we have fallen behind several of the countries of Europe. American colleges compare favorably with similar institutions abroad in teaching the classics, history, the sciences, and general literature, and our technical schools have made a fair beginning, promising valuable results. In technical instruction he thinks that Germany is somewhat in advance of most other countries. There young men and women may receive instruction in schools in any industrial pursuit they may wish to follow. For example, pupils are taught in these schools to sample and test oils, to judge the quality and grade of different textile fabrics, and to classify grains; and in metals they may learn the whole process of working, from the time the ore is taken from the earth until it leaves the machine shop a finished tool.

THE NATIONAL PARK.

Several gentlemen interested in the care of the Yellowstone Park have been holding a convention in this city. Professor Comstock, the geologist, of Cornell University, is their chairman, and Mr. P. W. Norris, at present the Superintendent of the park, is here in conference with them. It is understood that the association favor the establishment of signal stations, the employment of a paid superintendent, a survey of the boundaries, and other measures for the proper care and preservation of the park in the interests of science. While this wonderful region is the property of the United States, and abounds in natural beauties, mineral formation, and natural curiosities such as perhaps can be found in no other spot in the world, no care has ever been bestowed upon its preservation from depredation and despoilment. It is the object of these gentlemen to make such suggestions as may seem needful to this end, and to urge their adoption by adequate legislation by Congress.

Washington, D. C.

OCCASIONAL.

A Practical Puzzle.

To the Editor of the Scientific American:

A civil engineer working on a railroad in Illinois recently had occasion to weigh one of the iron rails. The rail was 30 feet long, and was supposed to weigh about 400 pounds. His only means of weighing was a pair of balance scales capable of weighing only 25 pounds. Query: How can he weigh the rail correctly with such scales? J. T. C. Rockville, Ind.

[Our correspondent sends us an ingenious answer to this problem, but we withhold it for the present to admit of our readers trying their skill at a solution.—Eds.]

Microscopical Notes.

Hardwick's *Monthly Microscopical Journal* (London) will not be published in future; the Royal Microscopical Society will therefore probably publish its own proceedings.

The society has for some time desired to adopt this course, and it was referred to by the President in his address in February, 1875, when he expressed his regret that the temperate correspondence carried on during the previous year in the *Journal* should have appeared in conjunction with its proceedings.

It is not easy for those outside the charmed circle to imagine how language could have been employed on a question of the "angle of aperture" that should have drawn forth such a rebuke. This style of scientific warfare appears to have commenced in 1871, when Washington hurled at Massachusetts the epithets "vulgar," "insolent," and "offensive," in reply to a charge of "deception." Later, when the war was carried on between Boston and London, mutual charges of "ignorance" of first principles, etc., appeared to be the favorite means employed to keep those in the fray at a fever heat.

Well might Mr. President Brooks remark that "if in a question of optics an alleged ignorance of some of the first principles of that science be manifested, and thereby a feeling of irritation rather than one of compassion be evoked, surely the blame must rest more with individual temperament than the nature of the question at issue."

Let us hope that in future an opinion may be courteously expressed on microscopy without rousing any of the "genus irritabile microscopicorum."

The recent and last experiments of Professor Tyndall in opposition to the "spontaneous generation" theory, although highly successful, must be merely regarded as a defeat to those who have asserted that the truth of the "theory" has been proved.

The question itself of the spontaneous generation of life still remains a problem for investigation, to tax the energy, perseverance, and intelligence of scientists.

Professor Tyndall has, however, done good work in setting back the "question" to its proper position—it is early days for expecting the solution, for one must possess a child-like simplicity to suppose the mighty issues here at stake are to be settled by a few experiments. It is Nature's greatest secret, and she will reveal it only to those who patiently unravel the apparent skein of mystery which surrounds it.

To those who study the lowest forms of life, and the embryology of the higher organizations, the belief in some form of the hypothesis of a "bio-genesis" forces itself with irresistible conviction. The knowledge thus acquired also distinctly proclaims the impracticability of decisive demonstration until an immense amount of work has been performed that must remove the date of the solution of the question to later generations.

The very basis on which investigation is conducted is continually changing, and new discovery is almost forcing the conclusion that the whole work of past naturalists must be revised.

Here is a piece of "protoplasm" which we can weigh, chemically analyze, and submit to microscopical examination, and so transparent that observations can be carried on almost to the verge of its molecular structure—a mere tiny atom of albuminous matter, but a mass of vitality. What is it? Who can explain the potentiality that creates or maintains the existence of the Amœba? It has the power of locomotion, reproduction of species, and can assimilate food, without the aid of any visible organized parts. If we cannot yet explain the nature of the agency here at work in a form of life that is visible and capable of analysis and examination, how can we pretend to solve the hypothesis of its genesis, probably in a condition beyond the limits of human vision?

Let therefore micro-naturalists renew their work with vigor, conscious in the belief that if their efforts are not crowned with immediate success, they will at least contribute to the garner of human knowledge, and pave the way to the solution of a problem that will doubtless influence the destiny of mankind.

Improvement in Extinguishing Fires on Shipboard.

The new steamship Sandhurst, 1,600 tons gross register, lately left Glasgow with a full cargo of coals for Bombay. The question of the extinction of fire, which so frequently takes place spontaneously in coal cargoes, has long engaged the attention of ship owners and others, and we are not quite certain whether systematic effectual means have hitherto been adopted to put out fire when once it arises in a coal cargo. The owners of the Sandhurst have long studied this question, and at their request the builders have succeeded in placing on board this vessel a very sensible and powerful machine to enable the crew, in case of fire, to drown it out by large volumes of water. The machine is a large brass pump worked by an engine attached and fed by a 4 inch copper pipe from the sea. The pump is powerful enough to supply a steady bore of water the full size of the pipes, which are led for delivery fore and aft the decks, and can raise and discharge 10,000 gallons an hour. The pump is arranged so that when a quantity of water has been pumped into the hold on a burning cargo the seacock can be closed and the water pumped up and either discharged overboard or again used to saturate the cargo. In addition to the pump to extinguish fire when it does break out there is an arrangement of pipes throughout the hold through which the thermometers can be passed

to test the temperature of any part of the cargo. A number of self-registering thermometers, specially made for this purpose, are on board the ship, and it is intended to test and register the temperature at certain intervals, so that the heating of the cargo in any part may be detected. Where the coals are densely stowed, and through which the thermometer pipes cannot be placed, iron rods are passed through the coals, which can at periods be drawn out to test the temperature in those places. A number of gentlemen connected with influential underwriting firms and the shipping interest in Glasgow visited the ship to inspect the arrangements referred to, and the general opinion is that they are such as to reduce to a minimum the risk of fire ever obtaining a mastery over the ship, or even breaking out. The Sandhurst is the third ship launched during the last twelve months by Messrs. Archibald McMillan & Son, Dumbarton, for her owners, Messrs. W. R. Price & Co., London.—*Marine Engineering News.*

Stoney's Force.

In a recent lecture on the spheroidal state of liquids, Professor Barratt said: To Mr. Stoney is unquestionably due the great honor of having been the first fully to explain the true theory of the radiometer. It was in the course of these investigations that Mr. Stoney has quite recently been led to show that the force which is so active in the high rarefaction (that is necessary for the effective rotation of the radiometer) is also present at ordinary atmospheric tensions. Now it is this force which forms the new explanation of the entire phenomenon of the spheroidal state. Professor Barratt proposed to call it "Stoney's force." In order to understand the action that occurs it must be recollected that, according to calculation, the number of molecules of air that at ordinary pressure occupy the space of a pin's head is 1,000,000,000,000,000,000; when the radiometer globe is exhausted of these molecules of air as far as we can do it by mechanical means, there are still some few millions remaining, and these are in constant motion. Heat makes them move more rapidly, cold more slowly. If we have two surfaces very near each other, one surface hot and the other cold, from the hot surface the molecules will be thrown off with greater rapidity than they reached it; and if the cold surface be near enough, they will "bombard" it. Hence there will be a tendency in the hot and cold surfaces to retreat from one another, and when with one of these, as in the radiometer, this is possible, it ensues. This force would obviously disappear (1) if the residual molecules could be wholly removed or so lessened in number that their action would be insensible, or (2) if the surfaces were so far apart that the augmented molecular activity had expended itself before reaching the cool surface. Applying the same kind of reasoning to the spherical state of liquids, we can see that it is only at relatively short distances from the metal the interaction will occur. A number of experiments were in conclusion shown, some with fluids from which there could be no vapor, such as the old theory requires, and others with fluids in which the difference in temperature was slight.

A Railroad Velocipede.

Mr. Johnson, a traveling musician, being in Garland, Col., and anxious to depart, manufactured a velocipede with which he proposed to travel into Texas. Having become possessed of two two-wheeled velocipedes, such as were in common use a few years ago, he proceeded to fasten them together to run on a railroad. Wooden axles were constructed so that the machine could be adapted to any gauge of track; a broader tread was placed on the wheels, to which were added flanges made of whisky barrel hoops; levers were fitted to give means for using the hands as well as the feet to gain motive power; the whole arrangement was given a coat of red paint, and it was placed on the track at Garland ready for service. The machine weighs about forty pounds, and is easily handled. The operator sits on a seat resting across what were the two seats of the old velocipedes.

Johnson mounted his novel traveling apparatus at Garland, and arrived here without accident, having made the trip at the rate of about fifteen miles per hour. He remained in this city a day or two, and altering the gauge of his car to suit that of the Atchison, Topeka & Santa Fe R. R., he started out on Friday afternoon for the East. Our informant tells us that he saw Johnson near Goldsmith's ranch, and tried to keep up with his car on a good horse, but the animal was soon distanced. The engineer of the eastern-bound passenger train met Johnson at Apishapa.

Johnson is an old railroad man, and always provides himself with a time card, so that he can keep out of the way of the regular trains. His apparatus is so light that it can be moved from the rails in a moment.—*Golden (Col.) Globe.*

Intermarriage of Relatives.

Mr. George Darwin, after searching investigation, concludes that "the widely different habits of life of men and women in civilized nations, especially among the upper classes, tend to counterbalance any evil from marriage between healthy closely related persons." Mr. Darwin's views are in a measure sustained by Dr. Vorn's inquiry into the commune of Batz. Batz is a rocky, secluded, ocean washed peninsula of the Loire Inferieure, France, containing over three thousand people of simple habits, who don't drink and commit no crime. For generations they have intermarried, but no cases have occurred of deaf-mutism, albinism, blindness, or malformation, and the number of children born is above the average.

Relative Cost of Water and Steam Power.

It having been stated in the *Journal of the Franklin Institute* that "the cost of raising water by water power at the Fairmount Works in Philadelphia was but 2 cents per one million gallons, raised 1 foot," Mr. Henry P. M. Birkinbine now says that the 2 cents referred to were expended for simply running the works, that is, attendants, oil, tallow, and ordinary repairs; it did not, however, include the entire cost, but left out of consideration the extraordinary repairs incidental to water power—those of maintaining the dam, head race, gates, etc. Had the calculation been properly made, it would have shown that the cost of raising water at Fairmount by water power was from 10 to 12 cents per million gallons, one foot high.

Mr. Birkinbine makes the correction because it was asserted that had steam power been employed instead of water it would have caused an additional outlay of \$13,000 to \$19,500 per annum. The conclusion at which Mr. Birkinbine arrives, on a consideration of the whole subject, is that, since the steam engine has been brought to the degree of perfection in simplicity, efficiency, economy, and reliability as we now have it, and as there are few locations in the thickly settled portions of our country where fuel cannot be procured at a moderate price, steam is preferable to water power. This is particularly the case where the water power is unfavorably located, and when the trouble incident to droughts, floods, etc., is taken into account.

Water Tube Boilers.

Mr. Robert Wilson states that the following appear to be the points that require special attention in designing water tube boilers, to insure their satisfactory working and durability:

1. To keep the joints out of the fire.
2. To protect the furnace tubes from the sudden impingement of cold air upon them on opening the fire door.
3. To provide against the delivery of the cold feed direct into the furnace tubes.
4. To provide means for a proper draft circulation, in order to carry away the steam from the heating surfaces.
5. To provide passages of ample size for the upward currents of steam and water, which must not interfere with the downward currents of water.
6. To provide passages of ample size for the steam and water between the various sections of the boiler, in order to equalize the pressure and water level in all.
7. To provide ample surface for the steam to leave the water quietly.
8. To provide a sufficiently large reservoir for the steam in order to prevent the water being drawn out of its proper place by suddenly opening a steam or safety valve.
9. To provide against the flame taking a short cut to the chimney and impinging against the tubes containing steam only.

The Biscuit Compass.

The manner in which erroneous statements sometimes find circulation in the newspapers is illustrated as follows:

A half column appears in print descriptive of a new process for preparing, baking, and putting up in sealed packages for market an improved food in very compact form, specially intended for long voyages, military purposes, hunting expeditions, etc. This paragraph is "boiled down" by the next editor, who is short of space, as follows:

"A London firm has introduced a hunting biscuit, containing in a small compass a great amount of nutrition."

Editor number three wants something still a trifle shorter, and so "reboils" the above item, making it to read:

"A London firm has introduced a hunting biscuit containing a small compass."

The original statement is thus transformed into a curious falsehood; and many people, with both items before their eyes, would fail to notice any fallacy in the last, because every word given is contained in the preceding item.

A Telephone Recipe.

Professor Barrett, in a recent lecture on the telephone, gave a recipe for making a cheap one. Take a wooden tooth-powder box and make a hole about the size of a half crown in the lid and the bottom. Take a disk of tinned iron, such as can be had from a preserved meat tin, and place it on the outside of the bottom of the box, and fix the cover on the other side of it. Then take a small bar magnet, place on one end a small cotton or silk reel, and round the reel wind some iron wire, leaving the ends loose. Fix one end of the magnet near, as near as possible without touching, to the disk, and then one part of the telephone is complete. A similar arrangement is needed for the other end. The two are connected by the wire, and with this Professor Barrett says that he has been able to converse at a distance of about 100 yards.

The Planet Mars.

Recent telescopic observations of the planet Mars have been made at Madeira by Mr. N. E. Green, whose drawings, made direct from the telescope, are said to surpass, both in accuracy and fullness of detail, all that have been previously made, including those by Mr. Dawes. Mr. Proctor's observations are also corrected in several instances. Mr. Green's observations would also appear to confirm an opinion previously expressed, that the "snow caps" do not agree with the poles of the axis of revolution.