

for a patent for a lamp is already before the Commissioner, and is taking its regular course. According to the rules of the Patent Office nothing concerning it can be divulged. It is understood, however, that it is progressing favorably. Mr. Edison has already received seven patents bearing on the electric light, and has filed three caveats. Five more similar applications are now under way. He has had a man in the Astor Library searching the French and English patent records and scientific journals, from the earliest dates down to the past fortnight, and says nothing like his arrangements has been revealed.

Mr. Edison is making elaborate preparations to introduce and experiment with the electric light. He purposes to commence at Menlo Park with 2,000 lights, using telegraph poles with 15 lights on each arm. This experiment, including the cost of the buildings, engine, generating machines, and everything, is estimated at from \$100,000 to \$125,000.

**SPREADING DIPHTHERIA BY KISSES.**

From the report of the physicians in attendance upon the grand ducal family of Hesse-Darmstadt during the recent outbreak of diphtheria which resulted in the death of Princess Alice, the range of the disease appears to have been sharply limited. From November 6 to the 14th six of the family were attacked; on the 6th, Princess Victoria, aged 16; in the night from the 11th to the 12th Princess Alice, aged 6; on the 12th Princess Mary, aged 4; in the night from the 12th to the 13th, Princess Irene, aged 12; in the afternoon of the 13th, the Hereditary Grand Duke Ernst Ludwig, aged 10; and on the 14th, the Grand Duke himself. Of the entire family, the Grand Duchess (Princess Alice of Great Britain) and one daughter (Princess Elizabeth) only were spared at that outbreak of the disease. The Grand Duchess, however, was attacked afterward. Immediately after the first member of the family (Princess Victoria) had fallen ill she was seen by a physician and at once separated from all the others. The same caution was observed after the falling ill of the other princesses, but without preventing the outbreak of the disease in the rest of the family. In all cases there were large patches of false membrane on the tonsils, and in most of them swelling of the lymphatic glands in the angle of the jaw. All the patients recovered with the exception of Princess Mary, in whose case the disease from its very beginning had shown a very insidious character. No member of the household (in all 60 persons), no nurse, no physician was infected. It is, therefore, clear, the British *Medical Journal* asserts, that "all the cases were produced by direct infection, doubtless by kisses." The physicians ascribe the intensity and limited extension of the epidemic to three conditions: 1. To the intensity of the infection carried from outside, because the membrane in the case of the first patient (Princess Victoria) looked from their very appearance discolored and ecchymosed; 2, to the direct transference of the infectious matter by kisses; 3, to the condition of the mucous membrane of the tonsils and of the pharynx of the infected persons, all of them having suffered very frequently from acute and chronic affection of these parts.

The lesson to be derived from this not exceptional experience is very clear. As every physician knows, it is no uncommon thing for adults to have diphtheria so mildly that it is mistaken for an ordinary sore throat resulting from cold; yet such a person can easily infect a child, and the child become a center of malignant infection. In view of the fatal prevalence of diphtheria, therefore, the kissing of a child upon the mouth by a person with a sore throat is hazardous, if not criminal; and scarcely less so is the practice of allowing children to kiss their ailing playmates. It would be wise to exercise great caution in this matter if not to discontinue the practice of kissing upon the mouth altogether.

**New Agricultural Inventions.**

An improved Load Binder has been patented by Mr. Henry A. Harris, of Katonah, N. Y. This is a simple and conveniently operated apparatus substituted for the pole and chains ordinarily employed for binding hay, straw, cut grain, or bales, bundles, etc., upon a rack or wagon body.

An improved Guano Distributer has been patented by Mr. James P. Lowell, of Purcellville, Va. The improvement relates particularly to the construction of the devices both for stirring the material in the hopper, and thus preventing its becoming aggregated in lumps, and also for causing its free and uniform discharge from the hopper.

Messrs. C. A. Sprague and John W. Clardy, of Weaver's Station, Ala., have patented a Cotton Chopper and Rake in which a vibrating hoe is employed to thin out the plants.

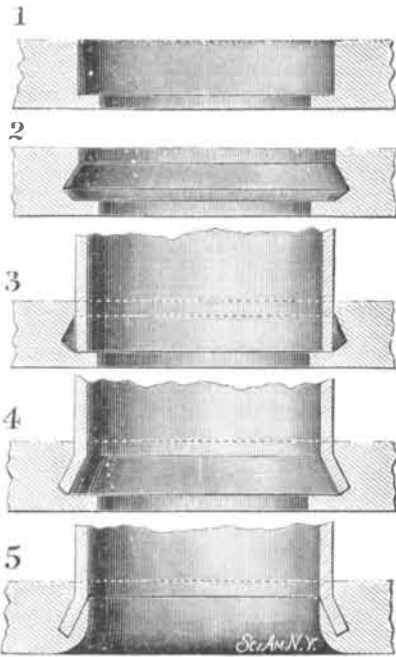
Mr. Aaron F. French, of Denison, Iowa, has patented an improved Harrow, the frame of which is fastened together by iron rods passed transversely into the ends and screwed into nuts or burrs let into the end beams. These rods serve also as draught bars, to which the whiffletrees are hooked.

**An International Fish Show.**

An international exhibition of the methods and products of sea and inland fisheries will be held at Berlin, Prussia, in April, 1880. Mr. R. B. Roosevelt urges the sending of exhibits from this country, confident that in several departments we could easily carry off the honors, though the Scandinavian states are far ahead of us in variety of methods of preserving fish.

**A NEW METHOD OF SETTING BOILER TUBES.**

We illustrate herewith a novel plan for setting tubes in steam boilers, which was recently patented by Mr. John E. Jerrold, of Meadville, Pa. The engraving exhibits the successive steps in the process of setting the tubes. Fig. 1 shows the tube sheet counterbored so as to leave an internal flange on the face side of the tube sheet. Fig. 2 shows the hole enlarged to receive the flared end of the tube. In Fig. 3 the end of the tube is in position to be flared, as shown in Fig. 4. In Fig. 5 the tube setting is shown complete, the internal flange of the tube sheet having been set down upon the flaring end of the tube.



**JERROLD'S METHOD OF SETTING BOILER TUBES.**

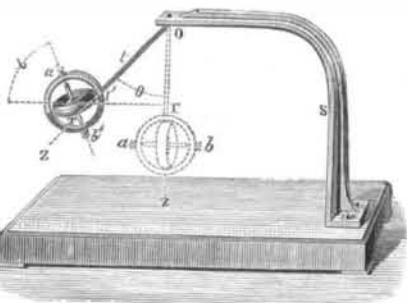
It is claimed by the inventor that a perfectly tight joint is secured without the use of an expanding tool. The surface of the tube sheet is perfectly plain and smooth, and the end of the tube is covered and protected from the fire. When this improvement is used copper thimbles will not be required.

We are informed that this method of tube setting has been thoroughly tested by some of the largest railroads in this country, and has proved very satisfactory.

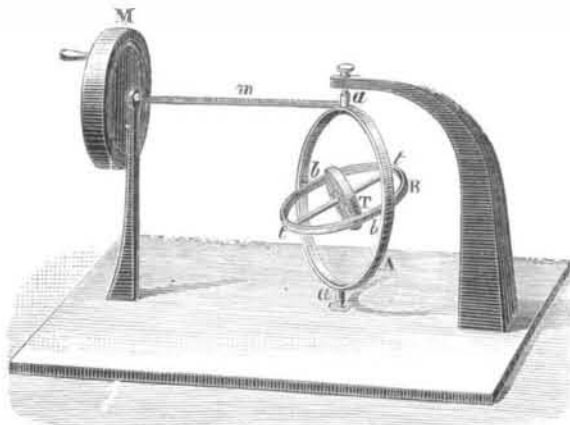
The patent is owned by the Patent Tube Setting Co., of Salamanca, N. Y. Further information may be obtained from J. F. Caldwell, secretary of the company, at Meadville, Pa.

**THE GRUEY GYROSCOPE AND THE GYROSCOPIC PENDULUM.**

The accompanying engravings represent two little instruments illustrating the principles involved in birotary or paradoxical motion. They were constructed by Mr. Gruey, a member of the French Academy of Sciences.



In Fig. 2, A is a brass ring suspended at *a*, so that it may swing freely around an axis, *aa'*. Within this ring is suspended a second ring, B, revolving around the axis, *bb'*. T is a circular disk turning with its axis, *tt'*, within the second ring, B; a plane, laid through *tt'*, traverses perpendicularly one laid through *bb'*. At *a* the ring, A, is



connected with a rod, *m*, the other extremity of which runs smoothly in an undulating groove in the wheel, M. When the latter is turned by means of the crank an oscillating motion is imparted to the rod, *m*, and consequently to the ring, A. These oscillations are very short and unobserved by the eye; the ring, A, apparently remains at rest.

The circular disk, having received a certain initial rotary velocity, the ring, B, is struck with the finger so as to impart to it a speed of 50 revolutions per second. The speed of the ring, B, increases in the measure as the rotary motion of the disk, T, is accelerated by turning the wheel, M, more rapidly. When this operation is stopped, the apparatus gradually comes to a standstill. This simple experiment illustrates well the rotation of a body around two different axes perpendicular to each other.

Fig. 1 represents the gyroscopic pendulum. A ring similar to the ring, A, in the gyroscope, is suspended by a thread of India rubber. Within the same a circular disk revolves freely with its axis, *a' b'*. When at rest the apparatus is in the vertical position, as indicated by the engraving. If, while in this position, the thread be twisted up and again allowed to untwist, after a rotary motion has been imparted to the disk, T, by striking it with the hand, the equilibrium is at once disturbed. As the thread twists and untwists alternately the pendulum assumes an inclined position and oscillates around a conical space with wide base, till the energy of the rotary motion of the disk, T, is exhausted and the latter is at rest.—*Les Mondes*.

**Petroleum Notes.**  
**PIPE LINES.**

The United Pipe Line Company was organized in 1877 by a consolidation between the following companies, viz.: The (old) United Pipe Lines, the Antwerp and Oil City Pipe Companies, the Atlantic Pipe Company, the American Transfer Company (in Clarion and Venango counties), and the Sandy Pipe Line.

At the present time (October, 1878) the company owns, and has in active operation, over 1,500 miles of 2 inch pipe, and 300 miles of 3 and 4 inch pipe. It has connected with these pipes more than 350 iron tanks, with a capacity of over 5,200,000 barrels of 42 gallons each, of which 1,800,000 barrels are owned by the company, and 3,400,000 barrels held by them under contract with the owners. It owns over 800 miles of telegraph wire connecting all its offices and stations with each other, and with the general office of the company at Oil City, Pa. It is fully equipped with boilers, pumps, and all necessary means for receiving and transporting to delivery points at least 75,000 barrels of oil per day. It has points of delivery upon all railroads in the oil regions, at which 2,500 cars, containing 225,000 barrels, can be loaded daily; and can deliver directly to refineries at Oil City, Pa.

**OIL PRODUCTION.**

The total production of crude petroleum, says *Stonell's Petroleum Reporter*, in Pennsylvania in November, 1878, was 1,348,952 barrels, against 1,173,420 barrels in November, 1877. Increase in 1878, 175,532 barrels.

The total amount of crude petroleum held in the producing regions of Pennsylvania December 1, 1878, was 4,289,309 barrels, against 2,471,798 barrels on the 1st day of December, 1877. Increase, 1,817,511 barrels.

The total exports of petroleum from the United States from January 1, 1878, to November 29, was 305,444,727 gallons, against 317,064,396 gallons for the same time in 1877. Decrease in 1878, 11,619,669 gallons. The Bradford district produced during the month of November, 746,279 barrels of petroleum, being about one half of the entire production in the United States.

The amount of crude petroleum represented by outstanding certificates on the last day of November was 1,784,443.35 barrels, against 1,517,484.27 barrels on the last day of October, a reduction during November of 266,959.88 barrels.

The oil produce of Pennsylvania has been to that State of more intrinsic value than all other industries combined. Its daily output of crude oil is about \$500,000, varying somewhat, of course, with market values. But for all practical purposes this estimate may be taken as correct. Now, this exceeds the daily gold and silver product of the Pacific slope. We recently gave detailed statistics on this point which prove the accuracy of our present statement.—*San Francisco Post*.

**KENTUCKY.**—The Carter and Alexander well, which was drilled on Renox Creek, in 1865, and never tested, has recently commenced flowing oil at the rate of 100 barrels per day. The gravity of the oil is about 41° and dark brown in color.

**ONTARIO.**—Exports of petroleum from the United States to the Dominion of Canada during the fiscal year ending June 30, 1877:

|                   |            |              |           |
|-------------------|------------|--------------|-----------|
| Crude.....        | 270 bbls., | valued at \$ | 2,158     |
| Naphtha.....      | 83 "       | " "          | 795       |
| Illuminating..... | 13,224 "   | " "          | 187,451   |
| Lubricating.....  | 1,728 "    | " "          | 21,959    |
| Residuum.....     | 76 "       | " "          | 505       |
|                   | 15,381 "   | " "          | \$162,868 |

**JAPAN.**—Crude oil is obtained in ten different provinces in Japan, and its existence has been known, according to Japanese writers, since A. D. 615, but the art of purifying it was not known till some six years ago; since which time refining establishments have been erected in five different places, with a total capacity of turning out 4,000 gallons per day.

**ASIA.**—The valley of the Euphrates is destined to become one of the greatest commercial and important political centers of the world. I have myself seen whole caravans traveling through this region bearing nothing but American petroleum. American petroleum now lights up the dark places of Nineveh, of Jerusalem, and all the cities of the East.—*Lecture by Dr. Newman*.

**Recent Facts about Poisons.****CARBOLIC ACID.**

According to the *Pharmaceut. Zeitung für Russl.*, Dr. Sanftleben, on the recommendation of Professor Baumann, has used sulphuric acid with the best success as an antidote to carbolic acid, the phenol combining with the acid to form phenyl sulphuric acid, which is not poisonous. He administers it in a mixture composed of diluted sulphuric acid 10 grammes, mucilage of gum arabic 200 grammes, and simple sirup 30 grammes, in doses of a tablespoonful every hour.

**POISONING BY MOULDY BREAD.**

An inquest was held at Barnsley, England, October 10, in relation to the deaths of two of eight persons poisoned by partaking of bread pudding made at the Albert Dining Rooms, Barnsley. A. H. Allen, public analyst, testified that he had examined the liver and kidney of one of the victims, and the liver and lungs of the other, without finding any trace of poisonous metal. The materials used in making the pudding had been carefully examined with negative results. The glaze of the basin in which the pudding was cooked had been found to be free from lead or other poisonous metals. The pudding had been very carefully examined and no deadly poison had been detected. The negative results of the chemical examinations for various metallic poisons had been borne out by the failure of either pudding to produce purging or other poisonous effects on a puppy which was fed on the suspected pudding for two whole days. There were not a few cases on record of irritant poisoning and death being produced by mouldy bread. Thus, horses have been killed in a short space of time after eating such bread in their ordinary food. The symptoms were those of an irritant poison. In 1829 an investigation was made in France into the cause of illness due to eating bread, and it was found, by experiment, that bread in a particular state of mouldiness or decay may not only produce symptoms of poisoning, but actually cause death; and it was impossible to distinguish the harmless from the dangerous kinds of mould. As fungi grow very rapidly, it is quite possible for mouldy bread to be quite poisonous at one date, and to have lost its poisonous properties two days afterward. One of the most poisonous of these fungi is ergot, which produces symptoms very similar to those occasioned by the pudding, and the reports of the evidence in the present case have caused an eminent toxicologist to express a very strong opinion that the presence of this fungus was the cause of the poisoning. The witness stated further, that from experiments and observations he thought it clearly shown that the pudding contained a substance which resembled ergot in all its chemical reactions. The pudding was made of bread said to be mouldy, and which was several weeks old and had been in contact with ham, butter, and miscellaneous scraps. Mr. Allen then submitted extracts of letters from the leading toxicologists of the kingdom whom he had consulted on the subject, and all of whom agreed with him in his opinions as set forth above.

**OPIUM POISONING.**

Dr. Sewall, in the *Medical Press and Circular*, relates the case of a woman, aged 35 years, who, suffering from angina pectoris, took 2 drachms of Battley's sedative at intervals of half an hour until she became insensible; taking in all, according to estimate, 3½ fluid ounces. A convulsion and marked symptoms of opium poisoning supervened. An enema of ½ pint of strong green tea was given, and in twenty-five minutes her lips became more florid, and respirations from thrice in two minutes to six times a minute. Fifteen minutes later ½ pint more of tea was given in the same way. In 4½ hours patient recovered consciousness.

**PHOSPHORUS.**

Two girls, aged 14 and 16, according to Dr. Wilmore, in the *British Medical Journal*, took ½ ounce of phosphorus paste. The subacute symptoms lasted for five days before the relatives became alarmed. Neither pain nor vomiting was severe. One patient died; the other (who took the least) recovered. Turpentine was administered through the latter case.

**SALICYLIC ACID.**

A case is reported from Wreschen, in Prussia, where a patient suffering from acute rheumatism was poisoned by impure and partially decomposed salicylic acid. After the dose of about 12 grains he began to perspire very freely; the perspiration increased with two more succeeding doses, and after the fourth dose violent headache supervened, followed by coma and death.

**THE POISON OF MILK SICKNESS.**

This is one of the most remarkable and subtle poisons known. All attempts to fix it on certain plants or elements of soil or water have failed. Yet it is of the most permanent and virulent character. The following illustration of this is given by a writer in the *North Carolina Medical Journal*:

"Captain Thompson lost thirteen of his cattle from milk sickness as he was driving them from the Milestone Knob (a noted place for the disease). He had them skinned, and the hides were hung on poles between his cribs; the rats being numerous, they gnawed the cellular substance from the hides, which was so poisonous as to kill every rat about the cribs." He adds: "This poison differs from all known poisons in the world, in the following particulars: (1) It lies quietly in the system for a long time, without exhibiting any of its toxic power, until the person or beast is forced to take exercise; (2) it is more ethereal and diffusive than any poison known to me. Most of the poisons with which I

am acquainted affect the stomach and bowels, the brain and nervous system; this pays no court to either, but extends through every muscle, bone, and tendon, affecting the whole system, even the skin and cellular substance under the skin."

**The Treatment of Baldness.**

In the *Atlanta Medical and Surgical Journal*, Dr. George H. Robe writes on this widely interesting subject:

Having been himself a sufferer from seborrhea and consequent alopecia for six or seven years, the writer has, as may be supposed, tried a great many remedies with a view to its alleviation and cure. Arsenic, internally, stimulating washes or oily applications, containing in the one case corrosive sublimate, in the other quinine or tannin, in still another some of the stimulating oils, were used with no appreciable effect either on the formation of scales or the depilation. Finally, about two years ago, an item went the rounds of the medical journals to the effect that a French physician, whose name has escaped me, had found that the local use of a five per cent solution of chloral hydrate was a sovereign remedy for the trouble under consideration. Rejoiced that at last I could appropriately shout "Eureka!" I began to use the chloral wash assiduously for about three months, following the directions given as accurately as possible. At the end of the three months the production of scales was more rapid and the fall of hair greater than ever. Disgusted with the failure of all the therapeutic measures which had been so highly lauded, I almost decided to let the affection take its own course, and run the risk of a shiny bald pate at thirty. About that time the second volume of Hebra's classical treatise on diseases of the skin came to hand, and one of the first things I read was Kaposi's thorough article on alopecia. Impressed with the reasonableness of the views put forth by Kaposi, I determined to give his plan of treatment a trial, with the result of checking the fall of hair and diminishing the production of scales in a reasonably short space of time. I have since then recommended the plan in a considerable number of instances, and when it has been faithfully carried out, with uniform success.

The success of the method depends upon the use of an agent which, while mildly stimulant, removes the scales and thoroughly cleanses the scalp. This agent is the German or French soft soap (green soap, schmierseife, savon vert) in alcoholic solution. This soap is now imported in large quantities and prescribed daily by the dermatologists of Boston, New York, Baltimore, Philadelphia, and other cities. The soap, containing an excess of alkali, saponifies the fatty matter of the sebaceous secretion, and it is thus easily removed. The alcohol greatly assists this action, and seems also to have an alterative action—if such an indefinite term is excusable—on the glands. The two may be combined as follows.

R. Saponis viridis (Germ.); alcoholis, ʒiij.; solve, filtra, et adde ol. lavandulæ gt. xx.-xxx.

The oil of lavender is added to cover the disagreeable fishy odor of the soap. The above makes a very handsome orange or wine colored preparation, with a pleasant odor, to which the most fastidious will hardly object.

This is used as a shampoo every morning or evening, pouring one or two tablespoonfuls on the head. Upon the addition of water, and smart friction with the fingers, a copious lather is soon produced. After keeping up the shampooing process for four or five minutes, all the soap must be washed out of the hair by the free use of warm or cold water, and the hair thoroughly dried by means of gentle friction with a soft towel. The immediate effect experienced is a disagreeable feeling of tension of the scalp, as if it were stretched too tightly over the skull. To obviate this effect, and to keep the scalp from getting too dry, and thus, perhaps, set up a true pityriasis, it is necessary to follow up the shampooing with some fatty application, which may contain some mild stimulant, thus: Castor oil, 1 part, to alcohol 3 or 4 parts, with a little oil of rosemary or cinnamon, or the elegant pomades and oils of Bazin and other manufacturers may be used. But the best as well as the neatest preparation that I have employed for this purpose is the hydrocarbon known in commerce as cosmoline. This is a product obtained from petroleum. It is entirely bland and unirritating; never turns rancid, and is comparatively cheap. It may be obtained in the fluid form or as a soft solid.

This procedure, shampooing, drying the hair, and applying the greasy preparation, must be repeated daily for three or four weeks. In the course of that time it will be discovered that the production of scales and the falling of the hair have been very markedly decreased. It will then suffice to repeat it two or three times a week for a month or two longer, after which a good shampoo once a week will usually succeed in maintaining a permanent cure.

Most patients will be alarmed after using this method at first, because the hair comes out in greater quantity than before. This is due to the fact that a large number of hairs are dead and only retained in their follicles by the plugging of the sheath with the accumulated sebaceous matter. The patient should, therefore, always be prepared for this result, and the cause of the increased falling of the hair explained to him.

It is not necessary, though more convenient, to cut the hair short during the treatment.

When the alopecia has lasted so long that the hair bulbs have become atrophied, nothing will restore the hair on those spots. Our endeavors must be directed to saving what remains. A prognosis favorable to the restoration of the hair must, therefore, be given with caution.

**Microscopic Examination of Meat.**

The microscope is, in many places, relied upon to decide upon the presence or absence of trichinæ in pork, but unfortunately, it often happens that a poor microscope or an inexperienced or careless manipulator fails to detect what is actually present, and by giving a feeling of false security does positive injury. This, too, has caused many to reject the microscopic test as useless.

The failure to detect trichinæ may, and often does, occur as the result of using too small pieces of meat for examination, rather than from inexperience, so that it is mere chance that this little scrap contains the object looked for. This is partially the fault of the books published for instruction in this subject, such as Wolf's and Lang's. Sometimes very few trichinæ are present, "few and far between." Recently an apothecary, Schaltz in Primkenau, examined twelve plates, each holding 6 pieces of meat, or 72 preparations, but found only 2 trichinæ. Tiemann demands the examination of at least 23 square inches of the substance, and introduces large glasses for this purpose, but it is very hazardous to bring very large surfaces under the microscope, and it is easy to overlook small objects, if few.

Kunstmann says that he has experimented with glasses 2 to 3 millimeters thick, of various sizes and shapes, in which the meat is held by screw clamps. At last he chose plate glass 6 or 8 millimeters thick. The power used for the examination of meat is so low and permits of so great a distance from the objective that both object glass and cover may be of the same thickness. For two years he has employed strips of plate glass 5 cm. (2 inches) wide and 40 cm. (16 inches) long, which fit accurately on each other. On one of these he puts the piece of flesh, cut with a curved scissors, spreads it out uniformly with a needle, and squeezes it between the two glasses, so that he has an unbroken preparation 2 cm. wide and 36 cm. long. Between these glasses the preparation lies fast without the use of any further pressure. This glass is passed lengthwise through under the objective, one edge being examined first and then the other, then the middle, no portion escaping. Glasses of this size can be employed with an objective that magnifies 60 diameters.

The same man, also, sometimes employs plates of glass 70 cm. (28 inches) long, but they require a special table, and can only be used in the laboratory or at home. It may seem a paradox to use such large glasses for microscopy, yet no other method offers such security. The meat examiner is compelled to examine the whole preparation, and only by the greatest carelessness can any trichinæ be overlooked. These long strips of glass can be obtained from the waste box at mirror manufacturers.

Another important point overlooked in most treatises on the subject is that the microscope must be placed high enough to look into it without bending the neck, which also leaves the hands in a more natural position to regulate the glass plate. A convenient cover for one eye is also desirable to avoid being obliged to hold it shut.

**Two Varieties of Sciatica.**

There are two varieties of sciatica, one in which the nutrition of the limb is unchanged, the other accompanied by atrophy of the limb. In the first class the neurilemma alone is affected; in the second, the nerve fibers are attacked by the inflammation and cause atrophy of the limb. There are two kinds of pain, one only present on motion of the limb, the other when the limb is at rest. In all cases the first element of cure is rest. To this in cases of the first class must be added blisters and hypodermic injections. The pain being allayed, dry fumigations should be used. Dry heat is better than douches of sulphurous or terebinthinate vapors. In default of the former, vapor douches give the best results.—*L'Union Médicale du Canada.*

**Oatmeal Diet.**

Undoubtedly one of the most healthful and nourishing articles of diet is oatmeal. When properly cooked and eaten with sugar and cream it forms a dish which most people relish better than meat for breakfast, and is very much cheaper. Liebig has chemically demonstrated that oatmeal is almost as nutritious as the very best English beef, and that it is richer than wheaten bread in the elements that go to form bone and muscle. Professor Forbes, of Edinburgh, during some twenty years, measured the breadth and height, and also tested the strength of both arms and loins, of the students of the University—a very numerous class and of various nationalities, drawn to Edinburgh by the fame of his teaching. He found that in height, breadth of chest and shoulders, and strength of arms and loins, the Belgians were at the bottom of the list; a little above them the English; and highest of all the Scotch, and Scotch-Irish from Ulster, who, like the natives of Scotland, are fed in their early years at least one meal a day of good oatmeal porridge.

**Moral Influences of the Study of Natural Science.**

If great care is taken to bring out the evidence in every case, and no statements are permitted to pass unquestioned which have not been tested by observation or experiment, a great respect will gradually arise for the truth. I believe that a conscientious regard for the truth may be established in this way without that word itself ever having been mentioned. Accuracy in observation and moderation of statement, are certainly the surest guardians, if not the keepers of truth, and these two qualities are more easily obtained by the study of objects than by any other means.—*Alpheus Hyatt.*