

Buried in a Tree.

One of the most curious mausoleums in the world was discovered the other day in an orchard at the village of Noebdenitz, in Saxe-Altenburg. A gigantic oak tree, which a storm had robbed of its crown, was up for public auction. Among the bidders happened to be Baron von Thummel, scion of a family of ancient lineage that has given the world of literature one charming poet and the fatherland many distinguished statesmen. The Baron, who lives on a neighboring estate, had ridden to the auction place quite accidentally. Finally the tree was knocked down to him for 200 marks. Upon his arrival at the castle he told an old servant of his purchase, describing the tree and its situation. The old servant said he remembered attending the funeral of a Baron Thummel seventy or eighty years ago, and that the body had been buried in a thousand-year-old oak belonging to the parsonage. Investigation clearly proved that the orchard had once been the property of the village church, and that at one side of the old oak was an iron shutter, rusty and time-worn, that the people of the town had always supposed to have been placed there by some joker or mischievous boys. The iron shutter proved to be the gate to the mausoleum of Baron Hans Wilhelm von Thummel, at one time minister of the state of Saxe-Altenburg, who died in 1824, and wished to be buried "in the thousand-year-old tree he loved so well." In the hollow of the tree Baron Hans caused to be built a sepulcher of solid masonry, large enough to accommodate his coffin. The coffin was placed there, as the church records show, on March 3, 1824, and the opening was closed by an iron gate. In the course of time a wall of wood grew over the opening, which had been enlarged to admit the coffin and the workmen, and for many years it has been completely shut, thus removing the last vestige of the odd use to which the old tree had been put. The tree has still some life in it, and its rich verdure is only now turning a violet tint. The coffin in which Baron Hans reposes has on one side grown to the tree, the dead and the live wood joining together in eternal embrace.—Public Opinion.

The New Soo Lock.

At Sault Ste. Marie the new 800 foot lock was officially opened by the revenue cutter Andrew Johnson and the harbor improvement steamer Hancock locking through 10:30 A. M., August 3. Work on the lock was commenced on May 4, 1887, when the first dipperful of earth was excavated for the cofferdam. Dimensions of the new lock are 800 feet long, 100 feet wide and 21 feet deep. The side walls are 1,100 feet long. From the east end for 282 feet the walls are 45 feet high, and from that point westward they are 43 feet high. The walls are 20 feet wide at the base and retain this width for 10 feet, when by five 2 foot offsets 5 feet apart they are narrowed to 10 feet in width. At either end the walls are 36 feet wide from base to top. The cut stone for facing is of the best Kelley Island limestone, and was transported here in the rough. The faces of the lock wall consist of 23 courses. From courses 2 to 22 the stones were cut 6 feet long, 3 feet wide and 2 feet thick, part of the first course and the capping course being 1½ feet thick. The cost to the United States for the masonry was \$1,085,469. In the basement of the power house are situated two 30 horse power turbines, which will drive 3 three plunger single acting high pressure pumps that will deliver pressure fluid to loaded accumulators, where it will be stored under pressure of 300 to 500 pounds per square inch, ready for use, and delivered to engines as required. The exhaust, or discharge, from the engines will be returned by means of a separate set of piping to a tank in the engine room and used continuously. The pressure fluid will be a limpid mineral oil, and will be used during the entire season. This will be different from the present lock, which uses water pressure in the summer and oil during the cold weather. The lock chamber can be filled and emptied when in operation in from 6 to 7 minutes. Water is let in through six culverts, which run longitudinally under the lock floor. In connection with the lock, there is under construction a magnificent office and power building of cut stone and brick, which will be completed in December. It is 81 feet 6 inches long and 80 feet 9 inches wide, and will cost approximately \$100,000. In the basement is located the operating machinery and pumping plant. Including the approaches, the great work completed will cost in the neighborhood of \$5,000,000. The work was begun under the supervision of the late Col. O. M. Poe, who lived to see the great undertaking practically completed. General Superintendent E. S. Wheeler had active direction of the work.—Marine Review.

THE HOUTS AUTOMATIC TELEPHONE SYSTEM.

This system provides improved means for allowing any subscriber in a system to instantly connect himself with any other subscriber without the aid of an operator at the central office. Each telephone in the system is provided with a call box as shown in Fig. 1,

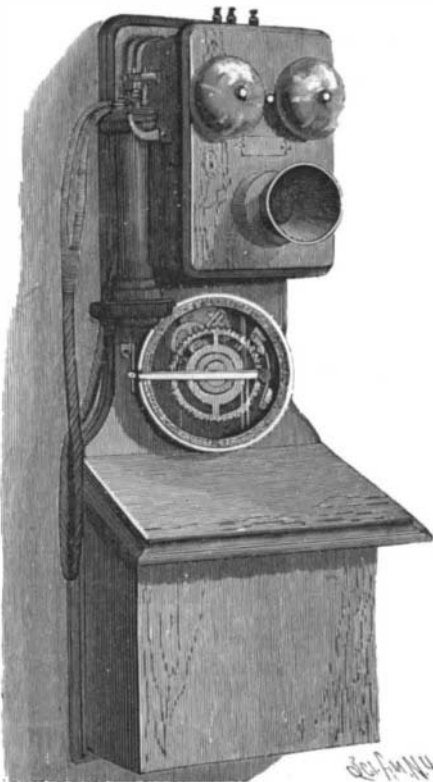


Fig. 1.—THE HOUTS TELEPHONE—AUTOMATIC CALL FOR SIXTY SUBSCRIBERS.

and at the central point where the wires come together a central appliance, as shown in Fig. 2, is so arranged that any call box in the system can instantly electrically connect the telephone to which it is attached to any other telephone in the system without interfering with any other telephone in the system or any conversation being carried on by any pair of telephones in the system. The improvement was patented by Wallace A. Houts and is being introduced by the Houts Automatic Telephone Switch Company, of Parker, S. D.

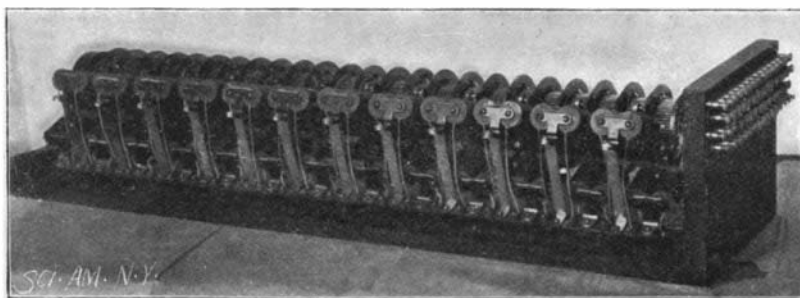


Fig. 3.—THE HOUTS TELEPHONE—SECTION OF CENTRAL OFFICE SWITCH.

The call box as shown in Fig. 1 is designed for sixty subscribers, while the central appliance in Fig. 2 has sixty wires, but only magnets and ratchet wheels enough for twenty-five subscribers.

In making a call the subscriber presses the handle on the face of the call box, moving the dial forward until the number with which he desires to communicate is opposite the button at the left. This button is pressed, which fixes the position of the dial, allowing the handle

to turn on until it again reaches the home point or falls into the notch from which the subscriber has started it. This releases the spring-actuated toothed wheel (Fig. 1), allowing it to move forward until the proper number of electrical impulses have been sent over the wires to the central point and the leg attached to a ratchet wheel (better shown in Fig. 3) has been moved forward until it rests upon the wire attached to the telephone the subscriber wishes to call. The bell is then rung in the usual manner, notifying the subscriber that he is wanted. A rod connecting the receiver hook and the call box releases the dial as soon as the receiver is replaced upon the hook. This starts the call box, which sends the proper number of impulses through the magnets (better shown in Fig. 3) and turns the ratchet wheel (Fig. 3), so that the leg is returned to and rests on the home wire.

By bearing in mind that each call box in the system has a pair of magnets at the central point and a ratchet wheel which is insulated from all the other wires of the system, the working can be readily understood. The central appliance is built up in sections to accommodate the number of subscribers in the system, each telephone in the system having a wire running under each ratchet wheel in central, and insulated from all the wires and ratchet wheels of the system except its own.

This is the simplest system to which our attention has been called and would seem to be perfectly applicable in all systems of 100 or less, where the expense of an operator creates quite a tax upon a few subscribers. By the use of this system, perfect night, day and Sunday service can be had.

Chemical Effects of the Sun's Rays.

The old text books used to tell us that the rays of the sun contain three things: light, heat, and actinism. We know now that these three things are one, or rather that the effects ascribed to them are different effects of one and the same radiation, which when it raises temperature is known as heat, when it affects the retina as light, and when it brings about chemical change as actinism. It remains a fact, however, that this last effect has been much less studied than either light or heat, except in some special and limited fields, such as that of photography. Some contributions toward a more exact knowledge of it are made by M. Duclaux, director of the Pasteur Institute at Paris, in the Annales of the Institute. We quote, says the Literary Digest, a notice from the British Medical Journal which runs as follows:

"The [chemical] activity of the rays was estimated by exposing solutions of oxalic acid of known strength to their action. The oxalic acid is converted with more or less rapidity into carbonic acid, which escapes, and at the end of the experiment the degree of acidity of the solution indicates the amount of the oxalic acid which has been decomposed, or 'burnt,' to use M. Duclaux's term. The results showed, as was to be expected, that with an overcast sky the chemical action of the sun's rays was much less than on a fine day, but beyond this they were far from concordant. With a dappled sky or with light cumulus clouds the solar combustion might be more active than with a blue sky or with a slight amount of cirrus. In a word, the apparent fineness of the day is not in any way related to its chemical activity and its hygienic power. On the whole, however, the action was greater in August than in September. This is in accordance with the experience of every photographer. As accounting partly for the discrepancies found between succeeding days both equally fine, M. Duclaux states that all essential oils and the odors sent forth into the air by vegetation diminish the actinic power of the radiations which reach the surface of the soil. A succession of warm days stimulating vegetation, and in mountainous regions increasing perhaps the amount of terebinthinate odors given out by the fir forests, will tend to render the air more impervious to, or more capable of absorbing, the actinic rays, so that on the third or fourth in a succession of fine days the chemical action of the sun's rays would be less than on the first. This difference under natural conditions would, however, be diminished by another observation made by M. Duclaux, to the effect that when in a liquid the chemical action set up by the sun's rays has once been started, it continues afterward more easily, so that when a partly overcast day follows a fine day the total action may be as great, or nearly as great, on the second as on the first day. M. Duclaux's researches certainly open up a wide field for research; they undoubtedly have a bearing on many hygienic questions, and we may echo his hope that his paper may stimulate others to prosecute similar inquiries."

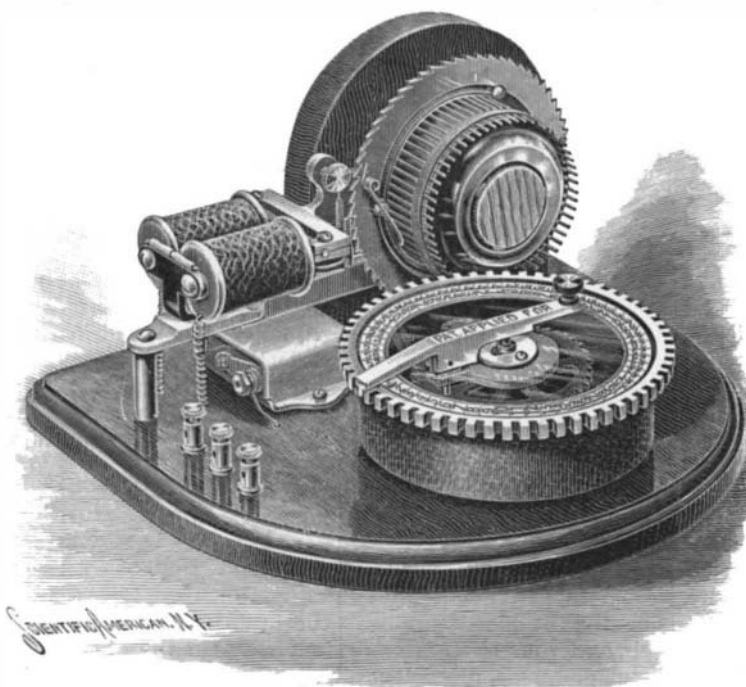


Fig. 2.—THE HOUTS TELEPHONE—CENTRAL OFFICE APPLIANCE.

Cycle Notes.

Scorchers are dealt with severely in Vienna. A rider whose only offense was scorching was sentenced to a week's imprisonment, while two others who run down pedestrians, injuring them slightly, were imprisoned for one and three months and were also obliged to pay damages.

A lamp will light easier if the tip of the wick is squeezed free from oil between the fingers. In lighting a lamp in a wind, turn the side window away from the wind, and the moment the lighted match is inserted close the window until the flame from the match has lighted the wick.

The latest thing aboard ship is a bicycle race, says the Bicycle World. Instead of storing their wheels below, the enthusiastic young cyclers this season are hanging them on hooks in their respective staterooms, and in the dawn of early morning, before others are up, a spin around the deserted deck is almost as refreshing as a spin in the park in the morning. Lounges and camp chairs are shoved aside, everybody clears the way, and it is "one, two, three" and around and around, the motion of the vessel in an ordinary sea giving the most delightful sensation imaginable. A spin on terra firma is nothing to a spin on the ocean wave, as it were.

On the western slope of the United States there are long rainy terms, and to overcome this Mr. R. E. Dawdy, of Hoquim, Washington, has designed a silk covered frame which conforms to some extent to the outline of the person and strikes the rider about ten inches from the neck. This arrangement is fastened to the handle bar and looks not unlike a kite. It keeps the legs and feet dry in the hardest rains. Mr. Dawdy has a lever attachment to his bell which is arranged so that it can be easily rung by the knee on the downward stroke. He uses a wide celluloid mud guard and has his pedals covered with leather. All of the bright work is covered with vaseline. It is a great mistake for riders to put up their wheels at the beginning of winter. With proper arrangements, there should be no difficulty in riding at any time when snow and slush do not prevent.

In the June Bulletin of the Society of Civil Engineers of France an exhaustive account is given of some tests made to determine the efficiency of pneumatic tires contributing to the ease and comfort of a vehicle. With the usual French thoroughness, it describes the earliest pneumatic tires, and reprints descriptions of them published in 1846. The experiments were made with the pneumatic tire and the ordinary wheel, and there were five series in all. The first was made on three days, when the ground was covered with two inches of snow, when the same was melting, and when the ground was muddy. The results obtained showed that with the empty carriage moving at a walk through the snow the draught was 35.9 pounds with the iron wheel, and but 25.2 pounds with the pneumatic tire. At a trot, with a load of 660 pounds, the pull was 68.6 pounds and 39.5 pounds respectively. In the mud, under the same condition of load and speed, the pulls were 35.2 and 50.7 pounds for the iron wheel, and 23.1 and 31.2 pounds for the pneumatic tire. The other tests consisted of pulls of varying speeds over macadam, paved, and ordinary roads, and in every instance the pneumatic tire showed a saving in pulling power of from 30 to nearly 50 per cent. As to comfort, the well known silence of the pneumatic tire is enlarged upon; also careful measurements were made to show the difference in the vibrations caused by the two types of tires, and in this the advantages of the pneumatic tire were clearly shown. Its springy action is demonstrated by the fact that when it is made to pass over three obstacles there is a wavy motion given to the diagram, and that if two of the three are removed, the same wavy effect remains. Hence the elasticity of the pneumatic tire is proved by the rhythmic vibrations that it produces. But the main feature of interest in the matter lies in the fact that the actual amount of power required to pull a carriage equipped with pneumatic tires is very much less than it is when ordinary wheels are used.

A Beaver's Dam Settles Ownership.

A very interesting suit has just been decided in the Court of Common Pleas of Huntingdon County, says the Philadelphia Press. About two years ago a Clearfield County surveyor, Thomas W. Moore, applied at the land office, in Harrisburg, for a warrant upon a tract of land in Carbon Township, that county, claiming that the land was vacant. The warrant being issued, the Rockhill Iron and Coal Company discovered that the tract was one of their most valued pieces of coal land, worth \$40,000. They filed a caveat protesting against Moore's claim.

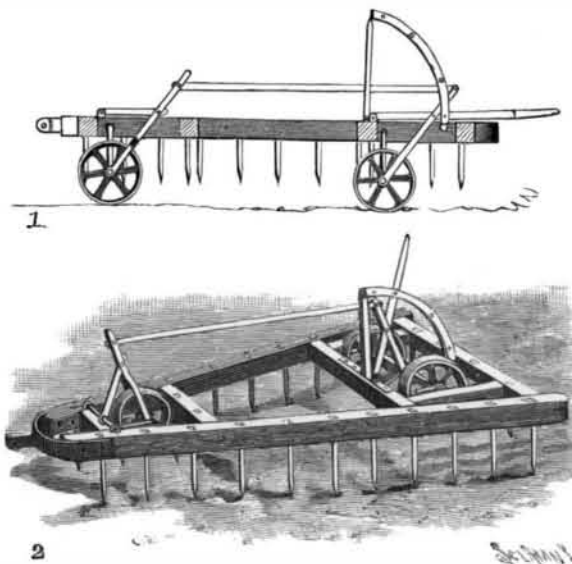
Upon trial of the case, Moore claimed that the land called for in the old warrant of 1786, on which the company based its title, was not on the tract in dispute, but somewhere else in the township.

The line trees having nearly all disappeared, the company would have had some trouble establishing its title had it not been that its old warrant of 1786 called for a beaver dam in Great Trough Creek and that the

company had taken the precaution to send Prof. Wilcox, of Philadelphia, an expert on beavers and their habits, and two surveyors, down to search for the old dam. The professor and his assistants dug down into the bottom of the stream at the point where legend fixed its location. After taking out a couple of feet of wash and gravel, which had accumulated in the bed of the creek within the last century, they found the old dam made by the beavers during or prior to the revolutionary war. The cribbing sticks of the dam were found buried side by side in regular order, and the marks of the beavers' teeth were visible in the wood. These relics from the beaver dam, with Prof. Wilcox's testimony, turned the tide in favor of the Rockhill Company, and the jury had little trouble in agreeing upon a verdict in its favor.

AN IMPROVED HARROW.

The illustration represents a harrow whose wheels may be readily raised and lowered within the line of the teeth of the harrow, the teeth in operation entering the ground only as far as desired, or being raised entirely from the ground when an obstruction is met with, or where the harrow is to be moved from one place to another. The improvement has been patented by Herman W. Ferling and Emil Heim, of Little Rock, Ark. Fig. 1 is a longitudinal section of the harrow, showing the teeth elevated, and Fig. 2 represents it in perspective, with the wheels elevated. Journalled in the side bars near the front of the harrow is a crank axle on which is the forward single wheel, the two rear wheels being on a second crank axle journalled near the rear of the harrow frame, and both axles, in the portions between their arms, are pivotally connected by links or rods with a parallel link or rod extending from front to rear of the harrow. The forward pivotal rod is also connected by a link with a forward cross bar, and the



FERLING AND HEIM'S HARROW.

rear rod is pivotally connected with a lever movable in an arched, looplike guide, the lever being adjusted in any desired position by passing a pin through openings in the guide and registering openings in the lever. The depth to which the teeth are to be permitted to enter the ground is regulated by the adjustment of the lever, by which the crank portions of the axles are simultaneously raised or lowered. The harrow may be used with particular advantage on planted ground, as it can be adjusted to skim the crust and not injure the seed.

The Afternoon Nap.

The frequency with which medical men are asked whether it is harmful to indulge in the "afternoon nap" is not, perhaps, surprising, for several reasons. Most persons have had experience of the seductive charms of the somnolence which has followed the comfortable ingestion of a midday or evening meal. The meal finished, the diner arranges himself comfortably in an armchair; it may be he lights a pipe or cigar, takes up a newspaper, and prepares to make the most of the restful conditions of his mind and body. But nature soon begins to assert her sway. In time, the eyelids close, the head begins to nod, the newspaper falls from the hands, the pipe, no longer supported in the mouth, falls to the floor, and the symptoms of a nap are complete. Whether the "winks" be forty or one hundred in number, the result is the same—a short, sound sleep. Then comes the question—Is it harmful thus to fall asleep after a meal? By no means; for the very obvious reason that the process is merely a physiological one, and as such, when it occurs, is quite natural. When digestion is in progress, nature has arranged that all the available blood in the body shall be collected in and about the digestive organs. Consequently, the blood supply to the brain falls to a low ebb, and thus sleep is easily induced. On the other hand, of course, physiologically, it is wrong for brain work to be attempted immediately after a solid meal.—Medical Press.

Science Notes.

There will be a national exposition held at Turin in 1898.

At the Leyden International Zoological Congress, held last year, it was decided that the next meeting of the kind should take place in England, in September, 1898, and that Sir William Flower, director of the British Museum (natural history), should be its president. We now learn that it has been determined that the 1898 congress, the fourth of the series, shall meet at Cambridge under the auspices of the university, simultaneously with the International Physiological Congress, which has arranged to go there in that year.

M. Maurice Versepuy, the African explorer, is on his way back to France, having successfully accomplished a journey across Equatorial Africa. M. Versepuy set out from Zanzibar on July 3, 1895, accompanied by M. De Saint Romon and M. Spock, with a caravan of one hundred and fifty-one Ascariis. The chief landmarks of his journey to the Upper Congo were Kilimanjaro, Mount Kenia, Boringo, Mengo, and Uganda. The expedition on several occasions met with resistance from the natives. This is the seventeenth time Africa has been crossed in modern times.

Sparrows are possessed of queer traits, and are in the habit of building nests in strange places. One would scarcely believe that a sparrow would build a nest upon the gear underneath a railroad car that traveled many miles in a day, yet such a case was noted by the press not long ago. A newspaper reporter, not long ago, was standing upon a canal bridge, and saw attached to the rail running along the deck over the rudder a sparrow's nest. Almost every electric light contains a sparrow's nest, tucked away in the top of the shade and protected from the glare of the light by the framework of the lamp. The electric light tenders, who change the carbon points every morning, expect to find the nests, and never disturb them, and the sparrows seem not to mind the men at work.

Some six years ago M. Vallot erected on Mont Blanc, 1,400 feet from the summit, or 14,381 feet above sea level, the highest meteorological observatory in Europe. Having made twenty-one or more ascents of the mountain, and obtained observations during three successive summers, he now generously offers the use, not only of laboratory and instruments, but of kitchen and salon, to meteorologists of any nation who care to pursue their investigations amid such exalted surroundings. Intending visitors are advised to provide themselves with a somewhat substantial smelling bottle in the form of a steel tube filled with compressed oxygen, the approved remedy for mountain sickness being to inhale a few quarts of this enlivening element. Four Frenchmen, three Swiss, a German, an Italian, and an American have already availed themselves of M. Vallot's invitation, which is presumably for the summer months.

An interesting scientific experiment was made recently in Paris with the aid of a balloon which was sent up from Villette at half past ten, says the Westminster Gazette. The object of the experiment was to collect a quantity of the atmosphere at a very great altitude for purposes of analysis. The balloon was, therefore, sent up alone with the necessary instruments attached to it. These consisted of an entirely new kind of reservoir, capable of holding six liters of air. To this was attached a spiral arrangement terminating in a tap hermetically sealed, but so arranged with a clockwork apparatus that it would open just one hour after the ascent and close again one minute later. A good deal of ingenuity had been displayed in this invention. In order to preserve the reservoir from the intense cold of the upper regions, it was surrounded by a bath of soda water, which was expected to keep the apparatus at an even temperature. In addition, the balloon also carried two baro-thermographs for registration purposes at high altitudes. Attached to the balloon are instructions to those who may find it, so that it may be carefully wrapped up and forwarded to Paris forthwith.

Lamentations are arising from the Jardin des Plantes, Paris, and if they are not heeded, the decline and fall of the Zoological Gardens of Paris will soon become a matter of history. Valuable trees are dead or are dying from lack of attention. The monkey houses are in a bad way; the cages kept for the wild beasts which happen still to be in the land of the living leave much to be desired, from the point of view both of comfort and security; and the animals generally are throughout the twelve months strict observers of a sort of Lenten diet. Five years ago the last survivor of the rhinoceros species went over to the majority, and the poor beast's place has not since been filled. Lately there was a scare because the solitary hippopotamus, aged forty-one, betrayed symptoms of a break-up. The prospect of the gardens being left without a single representative of that kind of animal proved too much for the worthy director, M. Milne Edwards, who, with great difficulty, contrived to scrape together 10,000 francs, with which he purchased a juvenile member of the tribe, which is now on its road to the metropolis. Lack of funds, it scarcely need be added, is at the bottom of this melancholy collapse. The allowance granted by the government has been cut down, and there is every likelihood of its being further curtailed.