MORE ABOUT PICKETT'S CAVE.

BY H. C. HOVEY.

In reply to inquiries concerning the new cave found in Williams' Cañon, Colorado, the following particulars are given:

"The Boys' Exploring Association," to whose diligence this discovery is due, is an organization of young mountaineers living in the vicinity of Pike's Peak, whose laudable purpose it is to combine the enjoyment of camping out with the study of botany, geology, and mineralogy, amid the hills and valleys of that remarkable region. In this they have been encouraged by Rev. R. T. Cross and President Tenney, of Colorado College, who have accompanied them on some of their excursions.

One of their earliest fields of exploration was Williams' Cañon, into whose crannies and crevices the boys penetrated under the direction of their leader; and two brothers, John and George Pickett, climbing up a path no one had ever tried before, crept into an opening only four feet high and ten feet long, which proved to be the antechamber of a cavern of huge dimensions.

Fortunately the boys had candles and matches along, and proceeded at once to explore room after room, each decorated by beautiful stalactitic folds and pendants. The largest then entered was about 60 feet high, irregular in shape, and described as resembling the bed of some river that had suddenly frozen while leaping down successive cascades. In a room to the right of this the boys were dismayed to find themselves on the brink of a pit, 50 feet deep, into which they were not prepared to descend.

Retracing their steps, they found a narrow passage leading up to the chimney-like opening described in my last; and here ended their first underground tour, whence, with great difficulty, they made their way back to the bottom of the canon.

The report they gave of course stimulated further exploration, with results already described, most of which are similar to those with which visitors to other caverns are familiar.

The presence of extensive beds of ocher indicates that the subterranean stream flowed from the granite mountains above, bringing the decomposed materials of the feldspathic rocks in the form of these ferruginous clays, which are so hard and compact as to take a fine polish.

Other evidences of former streams are furnished in the beds of rounded pebbles, often coated by stalagmitic deposits. It is an interesting fact that similar smooth pebbles are found in the *open* gorges or "caves," as they are incorrectly called, cutting through the walls at a height sometimes of 200 feet from the bottom.

The opinion is advanced that these caves and cañons were made when the ocean washed the foot of Pike's Peak; but that is hardly probable, in view of the fact that the geological formation is Silurian limestone, through which, as in the case of Mammoth and other caverns, the acidulated rain water could have eaten its way *since* the elevation of the region above the sea level. The swirling of a subterranean stream could round the fragments of granite into pebbles as readily as the wash of the waves.

In some instances we know that what now are open cañons were once caves; a striking example of which is furnished by the famous natural bridge of Virginia, the arch being merely the remnant of an ancient cave roof; and the combination of a cave, chasm, and natural bridge, on Hudson's Brook, Mass., as pictured in "Hitchcock's Report," vol. i., page 288, is even a better example of the same thing.

We cannot draw the conclusion that *all* cañons were once caves; but the subject is worthy of more careful investigation, and we commend the problem to the consideration of the "Boys' Exploring Association."

Among mineralogical peculiarities noted in Pickett's cave is the occurrence of oulopholites, or curled crystals of gypsum, often mimicking floral forms: likewise acicular crystals, probably of Epsom salts; both of which abound in Wyandot and Mammoth caves.

No inhabitants have yet been observed except bats and rats. And it is the opinion of the discoverers that no human beings ever penetrated to these subterranean rooms before. But it is so uniformly true, in respect to other caves, that careful examination has brought to light vestiges of aboriginal occupancy, that I am inclined to think it may prove so here.

Experiments should also be instituted forthwith to determine the rate of stalactitic growth, which is apparently very rapid in Pickett's cave. And the subject of stalactitic distortion by currents of air, fungoidal growths, and other causes, demands some attention for the sake of comparison with similar inquiries made in other localities.

Rock-boring Ephemera.

At the meeting of the New York Academy of Sciences, April 11, Dr. Trimble, of New Jersey, exhibited specimens of marine shells and marble which were deeply perforated by larva of certain ephemera. The marble had been bored in every direction to the depth of from two to three inches, and thus honey-combed with slender passages plugged at the entrance with a closely cemented deposit. In their flying state the ephemera (commonly called May flies or day flies) live but a few hours. The larvæ live in water for a year or more, and, according to Dr. Trimble, secrete an acid which enables them to bore into limstone, passing through their first transformation in the closed burrows.

STANDARD TIME IN THE UNITED STATES.

The American Metrological Society have issued a circular in relation to the introduction of uniform standard time into daily use for both popular and scientific matters; a question which, through the extension of rapid electric and railway communication, has become of considerable practical importance.

The society find at least a hundred local times or meridians in ordinary use, many of them differing but a few minutes from each other. More than seventy such standards are used by railway and other companies in the United States and Canada, making no little unnecessary confusion and complexity in their time-tables. It is, accordingly, proposed that the community unite upon a division of the continent into a few (time) sections, throughout each of which the time by the clock shall be kept in agreement with the standard meridian.

In anticipation of the ultimate adoption of a system of standard times throughout the world, the society recommends for the United States the adoption of a central meridian in the Mississippi valley exactly 90° or six hours west of Greenwich, and proceed to east and west by steps of exactly one hour each. On this plan the sectional times would be about as in the following:

PROPOSED SCHEDULE OF STANDARD TIMES.

Geographical Section.	Standard Meridian west of Greenwich	Standard Times slower than Greenwich.	Standard time slower or faster than true "local times."	Designation of proposed Standard Time.
		H. M. S.	Min.	
Newfoundland	60°	4 0 0	29 slower than St. John's, N. F.	Eastern Time.
New Brunswick			24 faster than St. John, N. B	
Nova Scotia			14 faster than Halifax, N. S	
Canada			15 slower than Quebec	Atlantic Time.
			18 faster than Toronto	
Maine to Florida,	75°	5 0 0	16 slower than Boston	
			3 slower than New York	
			8 faster than Washington	
Ohio to Alabama,			19 faster than Charleston	
			45 faster than Montgomery	
Lower Lakes			14 faster than Buffalo	
			30 faster than Detroit	
			38 faster than Cincinnati	
Mississippi Valley	90°	6 0 0	0 faster than New Orleans	Valley Time.
Missouri Valley			1 faster than St. Louis	
Upper Lakes			12 faster than St. Paul	
Texas			18 faster than Kansas City	
			19 faster than Galveston	
			10 slower than Chicago	
Rocky Mountain Region	105°	7 0 0	0 faster than Denver	Mountain Time.
			28 faster than Salt Lake City	
Pacific States	120°	8 0 0	12 slower than San Diego	Pacific Time.
			10 faster than San Francisco	
British Columbia			11 faster than Olympia	
			12 faster than Victoria	

What the Gulnare Expedition Failed to Do.

It will be remembered that the expedition in the Gulnare to plant the first Howgate Arctic colony came to naught through the unfitness of the vessel for any sort of sea-going service. The disappointed commander was naturally in no amiable frame of mind during his brief Arctic experience, and traces of his displeasure appear in the irony of his official report, a summary of which has got into unofficial print. Probably no one will enjoy his little scold any more than those explorers who did not fail so conspicuously.

"The cruise of the Gulnare," says Lieutenant Doane, "is the first acknowledged failure in Arctic annals. We did but little, but left a great many things undone requiring some moral courage to refrain from doing. We did not change the names of all the localities visited, as is customary, nor give them new latitudes, to the bewilderment of the general reader. We do not dispute any one's attained distance, nor declare it impossible that he should have been where he was. We did not hunt up nameless islands and promontories to tag them with the surnames of plethoric merchants and wildly enthusiastic females who had given us plug tobacco and button-hole bouquets. We did not even erect cenotaphs. A cenotaph is a monument erected to one who is buried elsewhere or not buried at all. The artistic style for such a structure is a pile of rocks, on the flattest of which is daubed in letters of tar the following stereotyped inscription: 'Sacred to the memory of the heroic ——.' Why a cenotaph should be erected where no one will see it, and what use there is in erecting one at all, are questions. We received no flags, converted no natives, killed no one. We discovered no new evidences regarding the Mosaic account of the Creation, nor the Deluge, nor the unity of races, nor the location of ancient Troy, nor the Garden of Eden. We found nothing in Greenland to put our naturalists to the blush by comparison, nothing superior to railroads and modern civilization. We did not see anything half so grand, half so sublime, nor half so beautiful there as can be seen in the Yellowstone National Park and a dozen other localities at home. We did not even see what others have seen in the same regions.

"The primary geographical iceberg, which in perspective towers above first-class ships in the foreground, and has a contemplative bear gazing seaward from the loftiest pinnacle, oblivious of the herd of fat seals on its beach, is not produced any more. Neither is the iceberg of shop windows. The present ones are not so high by several hundred feet, and instead of being in a freezing condition were rapidly thawing whenever afloat. Polar bears do not put their paws on men's shoulders and smilingly offer their stomachs to be ripped open in the Norwegian regions, as formerly. The rocks and bluffs of the Arctic are not at all clouded with water fowl, as pictured, nor is it dangerous to run a whaleboat lest it should ground on a sleeping whale, be pierced through by the horn of a narwahl, or captured by an angry herd of walrus. Arctic scenery is grand, but with little variety. The glacial phenomena alone in summer-time are magnificent; in winter the auroras are added. At the pole during the summer there is, of course, constant daylight; yet nobody seems to have thought it worth while to call attention to the fact that solar observations could be taken astronomically during that season. No one has proposed wintering at the pole. The proposition would probably not be carried into effect if outlined. The object of this report is to expose a few of the specious pleas, fallacious reasonings, and ill-grounded conjectures which are called scientific, and to place the subject of circumpolar exploration on a basis of facts and reasonable probabilities. One cannot explore the earth's surface from an observatory, nor by mathematics, nor by the power of logic. It must be done physically."

Another Florida Project.

Mention was made not long since of a plan to drain Lake Okeechobee and the adjoining Everglades of Florida, the aim being to reclaim some 12,000,000 acres of land suitable for the cultivation of sugar, cotton, and tropical fruits.

A charter has been granted by the State of Florida to another company—composed, however, of the same Philadelphia capitalists—having for its purpose the construction of a ship canal across the State by way of the Caloosahatchie River (the outlet of Lake Okeechobee), the lake, and eastward across the low country to the Atlantic, ending at or near the mouth of the St. Lucie River. The capital stock of the ship canal company is $30,000,000. It is said that operations will begin at once, surveyors having already been sent into the field.

A proper ship canal across the Florida peninsula is something to be desired; and, if the canal required for the Everglades drainage scheme can be utilized for commerce, its double usefulness might atone in part for its otherwise unfavorable position.

The Great Corliss Engine.

The great Corliss engine of the Centennial Exhibition seems to have the power of multiplying itself as remarkably as the bones of mediæval saints, or the furniture of the Mayflower. A little while ago, according to local reports, it was doing duty in San Francisco, and also in several other places this side the Rocky Mountains. Its latest appearance is in the new town of Pullman, near Chicago, where it gave impressiveness to the ceremony of inaugurating the Pullman Palace Car Works, just started there.

A Valuable Patent Right.

It is announced that the right to use in this country the basic process for dephosphorizing iron has been purchased by the Bessemer Steel Association. The Philadelphia *Bulletin* says that the figures involved in this important transaction (by which all of the patents covering the basic process, comprising those issued in the names of Messrs. Thomas, Riley and Snelus, become the property of the Bessemer Association) are placed all the way from $275,000 to $400,000, but parties who have facilities for knowing something of the matter say that the lesser figure is the correct one.

Instantaneous Silvering Mixture.

To coat copper or brass objects with silver, without difficulty or loss of time, the following process is given in the *Gewerb.-Bl. f. Ost- u. Westpreussen:* Mix 3 parts of chloride of silver with 20 parts of powdered cream of tartar and 15 parts of powdered common salt. Moisten a suitable quantity of the mixture with water, and rub it with a piece of blotting paper upon the metallic object, which must be thoroughly clean. The latter is afterward rubbed with a piece of cotton upon which precipitated chalk is dusted, then washed with water, and polished with a dry cloth.

Nitrate of Silver for Worms.

Dr. M. P. Greensword (*Medical Summary*) was accidentally led to regard nitrate of silver as a remedy for worms. Further use of this drug has convinced him that it is one of the most potent agents we have for the destruction and expulsion of worms. He gives a teaspoonful three times a day, of a solution of five grains of nitrate silver in six ounces of rain water.

Ladies, Beware!

A singular case is reported from the University of Michigan, service of Dr. A. B. Palmer. A young married woman of twenty-one years was brought to the hospital, suffering much pain, partly paralyzed, subject to convulsions, helpless. Various forms of treatment were used, particularly for uterine difficulties, which was the supposed trouble, but without improvement. Finally it was diagnosed that it was a case of lead poisoning, and under proper treatment for that disorder she soon improved and recovered. But how the lead ever found its way into her system could not at first be ascertained, though the most careful inquiry was made. It came out at last, however, that she had for several years been in the habit of beautifying her complexion by the use of a white powder sold as "flake white," which she applied to her cheeks after first wetting them with water. This "flake white" proved on analysis to be nothing more nor less than carbonate of lead, a deadly poison to the human system.

IMPROVED WATER METER.

There is no question of more vital importance to a city than that of its water supply. What at first seemed like a plentiful supply in many of our large cities has proved inadequate when the increasing waste has remained unchecked, but when this waste is checked by registering the amount of water used by means of efficient meters, the original estimates were found ample. This proved to be the case in this city, for according to the report of the Commissioner of Public Works in 1880, the supply which ten years ago was required for a population of 842,000, by the introduction of water meters is made to suffice for a population of 1,280,000.

The city of Brooklyn, which, during the last season, almost suffered a water panic, would have been enabled to distribute a plentiful supply of water and to arrest waste if a good water meter had been adopted. In fact, the universal adoption of an efficient meter, to be used as a part of the water supply system, is the only means of insuring economy in the use of water.

We give herewith an engraving of a meter, which, according to the reports of the New York and Chicago Water Commissioners, has proved very satisfactory. The following tabulated statement of the test at Chicago indicates very accurate registration:

Duration in Minutes.	No. of C. feet by Meter Register.	Actual quantity delivered.	Pressure upon Main.	Remarks.
22⅜	10	10·3	29·5	Discharging through 1 inch nozzle.
22⅞	10	10·4	30·5	" " " " "
22⅝	10	10·5	29·5	" " ⅜ " "
3⅛	10	10·3	30·5	" " ½ " "
9⅛	10	10·3	29·5	" " ¾ " "

The meter is shown in Fig. 1 with one of its heads and the cover of the recording mechanism removed, showing the inside of the cylinder and valve chamber with the piston and valves in position. Fig. 2 is a detail view of the piston, and Figs. 3 and 4 are, respectively, auxiliary and main valves.

Water is admitted to the meter through the inlet, E, to the main valve chamber, C, passing between the two middle heads of the main valve, C′, through ports into the cylinder, A, forcing the piston to one end of the cylinder. When near the end of its stroke it strikes one of the pins, D, projecting from the valve, B, and moves the valve in the same direction, thereby directing the flow of water into the valve chamber, C, between one of the outside heads of the main valve, C′, and the head of the meter. The main valve is then forced to the opposite end of the valve chamber, when the flow of water into the cylinder, A, is reversed, and the piston is moved back into its original position, forcing the water on the eduction side of the piston, downward and out through the exit opening, which is exactly opposite the inlet opening.

The recording mechanism is operated by a double cam, F, projecting from the center of the piston, A′, as seen in Fig. 2. This cam engages a forked lever having two projecting lugs, G G, projecting into the cylinder. This forked lever is attached to the lower end of a vertical shaft which extends upward through a stuffing box, and carries a double lever at the top, having two pawls which engage a ratchet wheel actuating the recording mechanism on the top of the meter, the wheel being moved forward one tooth for each stroke of the piston.

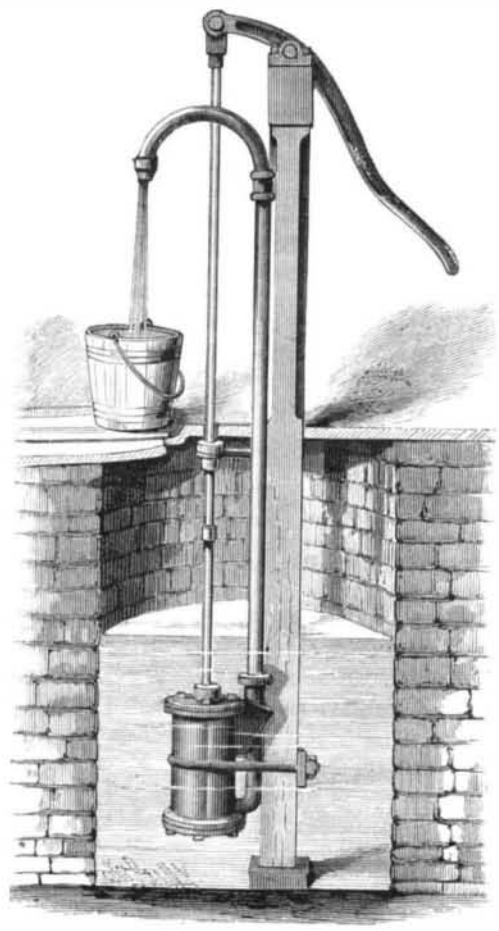
This meter is inexpensive in its construction and registers accurately.

Further information may be obtained by addressing Mr. Augustus Sequeira, 1447 Broad street, Hartford, Conn.

DANIEL F. BEATTY, the celebrated organ manufacturer, of Washington, New Jersey, was re-elected Mayor of that city this week. This is the third successive term of Mayor Beatty.

IMPROVED FORCE PUMP

The annexed engraving represents an improved force pump recently patented by Mr. A. J. Hopkins, of Hamilton, Ontario, Canada. The cylinder of the pump is mounted on a standard which rests on the bottom of the well, and reaches above the well covering a sufficient distance to receive the handle and support the upper end of the discharge pipe.



IMPROVED FORCE PUMP.

The pump is double-acting and works very freely, taking the water from the bottom of the well where it is coolest and purest. It can never freeze, for as soon as the movement of the piston is stopped the water retreats from the discharge pipe into the well. The pump is well made and calculated to remain in order in all seasons and under all conditions.

A New Photographic Process.

The phosphorescent properties of sulphide of calcium have been applied to many purposes more or less useful both in and outside the bounds of photography; but so far as the latter is concerned the applications have been hitherto of little real practical utility.

At a meeting of the London Photographic Club, however, Mr. A. L. Henderson announced an entirely new and, if it should prove to be practically workable, a most valuable application of the sulphide of calcium. This is, as yet, only in the experimental stage, and is given to the public that others may join in working it out to a practical issue. It consists in a method of producing instantaneous pictures by any light, however feeble—as Mr. Henderson himself described it, even by gaslight—with a pinhole stop. This result is attained by incorporating finely divided sulphide of calcium with the emulsion itself. With such an emulsion Mr. Henderson has himself obtained startling results, though as yet not perhaps photographically perfect. The luminosity set up by the momentary exposure of the phosphorescent film to light, feeble though it may be to the eye, is sufficiently powerful to gradually impress the particles of silver bromide, which, after a short time, become amenable to alkaline or other development in the same manner as if impressed in the ordinary way, the length of time between exposure and development ruling the degree of impression effect; in other words, the longer the plate is kept the better or more fully "exposed" it will be. We have not yet had the opportunity of trying this novel application of phosphorescent light to photographic purposes, as while we write but a few hours have elapsed since it was made public; nor is it possible yet to prognosticate what degree of success will attend its practice; but we give it at once to our readers on Mr. Henderson's behalf, feeling certain that many will be ready to enter the field of research in this direction.—*British Journal of Photography.*

Alcoholism a Predisposing Cause of Crime and Epilepsy.

In a recent number of the journal with the awkward title *Brain*, Dr. Clarke has published some tables of statistics, which lead him to the conclusion that "alcoholism of parents is a predisposing cause of crime and epilepsy in their children." Forty-four per cent of the epileptic criminals were the children of drunken parents. The proportion of epileptic and insane relatives is found to be very much greater with criminals than with ordinary epileptics. The convictions for bastardy are three times as numerous among epileptics as among non-epileptics. The statistics show that the amount of crime, as indicated by the number of convictions, is greater among epileptics than among ordinary criminals.

MECHANICAL INVENTIONS.

A safe and simple stationary fire escape, suitable for buildings of all kinds, has been patented by Mr. Charles Barlow, of Cookshire, Quebec, Canada. The invention consists of two cylinders fixed on different radii, each cylinder being filled with liquid, air, or gas, and containing two pistons provided with orifices that may be opened or closed by the relative adjustment of the pistons, to prevent or permit the passage of the liquid or air from one end to the other of the said cylinders, and thereby retard or hasten the operation of the lowering mechanism.

Mr. William H. Grubb, of Hannibal, Mo., has patented an improved device for bending metal tubes, consisting of a steel plate having several holes of different sizes which are perpendicular to the faces of the plate, and the holes are of the exact size required for standard sizes of pipe. The device is first firmly secured in vertical position in a vise clamp, the portion in which the hole is formed being uppermost. One end of the pipe is then inserted in the hole and the pipe drawn gently toward or pushed from the workman at right angles to the axis of the hole. The pipe is then pushed through the hole half an inch, or thereabout, and the operation of drawing and bending repeated, thus producing the curve.

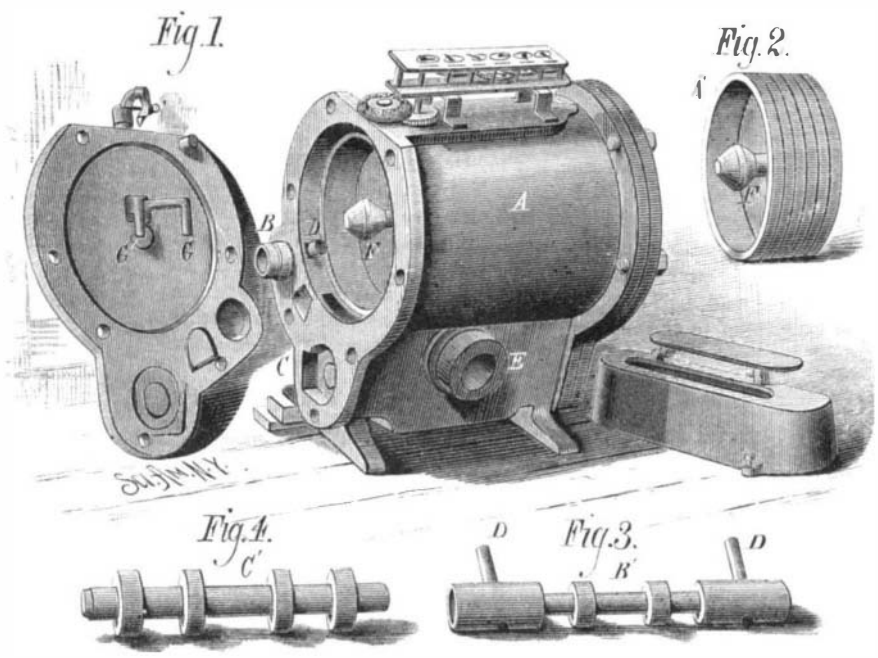
Messrs. George M. Fay and Nahum Fay, of Eureka, Cal., has patented a combined sawing, grooving, and planing machine, more particularly intended for the sawing, planing, and grooving of boards to be used for roofing.

A mandrel that may readily be inserted in and withdrawn from the hole in the piece of work to be turned, that furnishes a parallel bearing the full length of the hole or any part thereof, has been patented by Mr. John A. Wilde, of Hudson, N. Y., The invention consists of a mandrel having an enlargement or boss in the middle of its length, or at either end, that is cut away so as to form two raised parallel longitudinal bearings and a corresponding groove, which are at equal distances apart, the groove being deeper at one end than at the other, and being designed to receive the third bearing, which consists of a corresponding key that is to be forced into the groove to secure the mandrel in place in any piece of work.

A simple saw-filing machine that is readily adjustable for any desired rake, bevel, and depth of tooth, and for any length of file, has been patented by Mr. Eugene P. Ellis, of Emporia, Kan.

A magnetic support for scale beams has been patented by Mr. Solomon H. Brackett, of St. Johnsbury, Vt. This invention relates to beam or even balance scales, or other scales depending on pivoted levers. The main feature of this invention consists in the combination, with the pivotal beam or lever, of a magnet arranged to attract the central or pivotal part of the beam, and suspend or partly suspend the same against the action of gravity.

An improved tiling for roofs, etc., has been patented by Mr. John J. Williams, of Fair Haven, Vt. The object of this invention is to apply tiling to roofs, floors, and other places in such a manner that water cannot pass in through the joints between the tiles, and that the expansion, contraction, springing, and sagging of the tiling or its support will not open the joints and cause leakage.



SEQUEIRA'S WATER METER.