A REMARKABLE GEOLOGICAL DISCOVERY.

Mr. Charles M. Wheatley, for many years a member of the Lyceum of Natural History of New York, and known to be an excellent naturalist and geologist, informs us that he has found a "bone cave" a few miles from Phœnixville, not far from the famous Wheatley mines, from which such choice specimens of lead ore were obtained a few years ago. This is one of the most important geological discoveries thus far made on our continent. It is the fi st genuine bone cave of America, and will help to solve some of the questions of ancient animal life of the Western continent. The floor of the cave is covered with remains of animals that are supposed to belong to the post-tertiary epoch. Professor E. D. Cope, of Philadelphia, is working up the animals, Mr. Horn will describe the insects, and it is hoped that Professor Newbery, of Columbia College, will study the plants.

So far, the investigations have disclosed 22 vertebrates, 5 insects, and 10 or more plants. Among the animals are the following: A large sloth, with gigantic claws, called by Jefferson the *Megalonyx*; a mastodon, with a tusk 11 feet long; a bear, fully as large as the grizzly bear, but entirely distinct in character from all the existing species of North America and the northern regions of the old world, as well as from the cave bear; a tapir, a horse, a wolf, and other skeletons not yet described.

We do not understand that any human remains, or any implements fashioned by human hands, have thus far been found. Many geologists are of the opinion that the mastodon, gigantic elephant, the great sloth, and many other of the extinct animals, have lived since the time of man, and the discovery of human bones in such a cave would confirm the theory.

Further developments will be looked forward to with great interest by the scientific world.

THE PECUNIARY PROSPECTS OF THE EAST RIVER BRIDGE.

The present winter has been unusually cold at this point, and both the North and East rivers have been filled with floating ice barriers, seriously interfering with the traffic between New York and the neighboring cities on Long Island and in New Jersey. The ferry companies have sustained much loss from damage to their boats, and people residing in the cities alluded to, and doing business in New York, have been obliged to submit to much detention.

These untoward events have given rise to much discussion, more particularly in the Brooklyn papers, as to the desirability of the early completion of the East River Bridge, which is evidently looked forward to as the great solution of the problem of quick transit between the two cities.

This bridge will, of course, if successfully completed, form an avenue by which travel may pass, unimpeded by fogs or ice, and free from the present inconveniences of ferry travel, but in our opinion it can never supersede the ferries as a means of transit, except on the occasions when ice or fog renders ferry passage unusually dangerous.

It is folly to suppose a single means of communication can absorb the whole travel between New York and Brooklyn, or a tenth part of it. The termini of this bridge can be reached, by a large portion of the residents of the two cities, only through an expenditure of as much time as would suffice to reach their homes by the routes they now take. Under ordinary circumstances, few will go, from a ferry that in fifteen or fewer minutes will place them across the river, a distance of a mile, or even a half a mile, to walk or ride across a bridge one mile in length.

In the ordinary routine of business, the travel will follow the shortest routes, and if a slight additional risk be unavoidable, it will take the risk, rather than make the sacrifice of time.

The traffic of the bridge will, in fine weather, be confined to small areas in the immediate vicinity of its termini; and that this, in connection with increased travel in bad weather, will make it a paying investment, we cannot believe.

In the provision of channels of communication for large and populous towns, not one large avenue, but many smaller ones, best meet the needs of the population.

INTELLIGENT LEGISLATION ABOUT MEDICAL PRESCRIPTIONS.

A bill has been presented at Albany which reads very much like a hoax, and we should hesitate to allude to it if it were not pretty well authenticated. There are three points in it. First, it is proposed to appoint a commission of five physicians to examine the prescription clerks of druggists, to see if they are competent to be licensed for their professions. As an offset to this, it might be well to have a commission of druggists to examine the physicians to see if they know how to write prescriptions. Second, Latin prescriptions are to be prohibited, in consequence of frequent blunders committed by druggists' clerks, not to say by ignorant doctors. Third, as the prescriptions will hereafter be in English, the patient will be able to ascertain what medicines the doctor recommends, and, in case of a second attack, can send to the apothecary to have the same remedies put up, and thus avoid the necessity of paying a second fee to the physician. To prevent this shrewd economy on the part of the patient, it is proposed to prohibit the druggist from putting up a prescription a second time, unless by order of the doctor, and thus to compel the invalid to send for the doctor, or to have recourse to quack medicines, the sale of which it is not proposed to restrict. It is difficult to conceive who could have concocted such a bill as this, so full of conceit on the part of physicians, so unjust to druggists, and so revolutionary in the whole history and practice of medicine.

If we could enact by law that the physician should know his profession before obtaining his degree, and the druggist his business before procuring a licence, it would be a good thing; but how to frame such a law, and how to enforce it, is not so easy a matter. And, to cap the climax, it is proposed to empower the mayor, who is supposed to be well read in phy ic, to appoint the examining board of five physicians, and thus to make our apothecaries' shops a part of the great political machine. As there are many drug stores in the city, and an army of clerks, each one of whom would have "to see" the five political doctors before obtaining a licence, it would be a good thing for the doctors, but we are not so convinced that the public would be any better served than they are under the present system.

Better leave the Pharmaceutical College to take care of the druggists, the Medical College to look after the doctors, and the mayor to attend to the business properly appertaining to his office.

HOW THE ICE BRIDGE IS FORMED IN THE EAST RIVER.

Within the week past, many thousands of persons have crossed the East river, between New York and Brooklyn, walking on the ice. It is popularly supposed that the preliminary to this feat must have been the freezing over of the river; and on every occasion of the kind, we are entertained with marvelous stories of the hair-breadth escapes of the venturesome pedestrians. A friend who resides in full view of the river, and who has for years observed the formation of these ice bridges, was one of the many crossers on Monday last. From him we derive the following explanation of the phenomenon:

The ice bridges of the East river are dependent entirely upon two simple conditions. The first of these is the existence of large fields of heavy floating ice *in the North river*, and the second is the prevalence of a westerly wind at the time the tide-stream ceases flowing toward the ocean, and commences to flow up the rivers—technically, at the last of the ebb and the first of the flood. Ice is very rarely formed in either of the river channels about New York, and may be said never to be formed with any sustaining power. Drift ice may be frozen together, and thus form in masses, but the currents are too active, and navigation too incessant, day and night, to permit anything like the freezing process usual in less disturbed localities.

To understand the formation of the ice bridges in the East river, we must premise that the width of the river at its mouth, opposite the Battery—described by the position of Hamilton Ferry—is twice as great as its width at the point near Catherine Ferry, where the bridge is being constructed; the latter point forming, as it were, the neck of a funnel. It is also needful to know that the tide-stream begins its upward flow in the East river, half an hour, and sometimes a full hour, before the same flow occurs in the North river. Let us imagine ourselves as floating in the North river, upon one of those immense fields or ice, which, by various means, become detached from the main body at a considerable distance northward from the city. We have been floating down toward the ocean for some five hours. We arrive at the lower point of New York Island after the tide-stream has commenced the upward flow in the East river. A westerly wind prevails. The downward stream on which we float is ceasing, because the ocean tide is already coming in to check it, and because of the large expanse of water in New York Bay. The wind drifts us, little by little, along the easterly shore of the bay. Presently the North river tide-stream is turned, and runs back up the river. But the East river stream has now attained a considerable velocity, and is "sucking" in from the North river whatever comes within its reach. The westerly wind facilitates this, by driving our ice field within its clutches, and then our journey up the East river is begun. A few moments suffices to bring us to the "neck of the funnel." One side of our ice field strikes the Brooklyn shore, and it is thus held, while the other swings forward until it strikes on the New York shore. If the ice be sufficiently firm and compact, it thus becomes a wedge, which the flowing tide but makes the stronger and more secure. Thus none but compact ice is strong enough to resist the tide, and that which does resist it is abundantly secure, not only for pedestrians, but even for horses, sleighs, and cars, if the use of them were practicable.

Only when the tide changes, and the stream returns toward the ocean, is the bridge broken. Then risks are run in endeavors to get off from the the moving ice. But the risks and dangers do not arise from the insecurity of the ice itself. All around the edges of the great field are small, detached pieces. Many persons, when they find themselves being floated off by the new tide-stream, become alarmed, and seek to reach the shore by hastily jumping upon these detached pieces, or by trying even to walk upon the water itself, and their temerity is punished in the usual way. Safety is only a question of time and endurance to those who have courage enough to remain and float until a landing may be effected directly, or by means of a boat.

RAIN STATISTICS.—Water is so universally present in the air that the influence of the moon upon the rain-fall, as on the sea, in the tides, may be watched with interest. Mr. Glaisher asserts, after much long and patient investigation, that the ninth day of the moon is the most rainy of the whole twenty-eight, and that in the first and last weeks of the moon's age, the rain-fall is less than the average. The records kept by Mr. Glaisher also indicate four o'clock in the afternoon as the rainiest hour in the day.

PROGRESS OF FOREIGN INVENTION.

It is interesting to watch the progress of invention abroad, and see how the inventive minds of both hemispheres move in parallel grooves. Our late exchanges bring accounts of several inventions recently patented in England, which have also been recently patented in the United States. Doubtless some of the English applicants have pirated American inventions which they knew were valuable in England, the door having been left open by neglect on the part of the original inventor, to secure his invention by foreign patents.

ORNAMENTING PAPER.

Mr. H. Airy, of Greenwich, England, has patented a process which consists in ornamenting paper, woven fabrics, and other surfaces, first. by the swinging of a compound pendulum, whereby a great variety of separate figures is drawn in ink of any kind, or in pencil, on paper of any kind, or on wood, or by a pointed instrument, on steel or copper plate coated with protecting matter for etching, whereby, also, these figures are traced by a pointed instrument on the surface of a copper cylinder coated with protecting matter; second, by a machine which closely imitates the natural figures drawn by the pendulum, and also executes a great variety of kindred figures, all coming under the definition given above. The machine is made to trace or engrave these figures on the surface of a copper cylinder, such as is used by cotton printers and others, or on the surface of a copper, or other soft metal plate.

INSTRUMENT FOR MEASURING ANGLES.

This is also an English invention. A reservoir of any suitable shape and material is formed, with an opening in its upper side or top, or elsewhere, and with this reservoir, at or near its upper and lower parts, are connected the two ends of a bent glass tube. The tube is raised at an angle or horizontally. The reservoir is partly filled with fluid, and the opening hermetically closed so as to prevent any escape of the liquid employed. One or each of the legs of the tube is marked with a scale or indicator representing degrees, minutes, and divisions of minutes, and when needed, another scale is placed in close proximity to the legs of the tube, and so constructed as to represent at once the distances corresponding to the angles of depression or elevation for given hights, indicated by the position at which the fluid subsides. The reservoir and tube are fitted in a frame or case, to preserve them from injury. Over the reservoir a shield of wood or other material is fixed by screws or otherwise, and when necessary, some non-conducting substance is inserted between the shield and reservoir, to prevent any effects from changes of temperature upon the fluid and reservoir. The top surface of the frame of the instrument will, as a rule, be made perfectly straight, and when so made for moderate distances, such as those visible to the naked eye, the line of sight could be taken along with it; but where long distances have to be brought within view, and great accuracy is required, a telescope is placed on the upper edge of the instrument and adjusted at an angle or otherwise to the horizon. The instrument, whether to be used with or without a telescope, is accurately graduated by a theodolite.

APPARATUS FOR EVAPORATING LIQUIDS IN SUGAR REFINING, ETC.

This is a French invention, in which the process of evaporation or boiling is commenced: either at the atmospheric pressure, with a decrease of one tenth, or one twentieth, or less (according to the number of boilers employed), in each succeeding boiler; or the process may be commenced at a pressure above that of the atmosphere and terminated at a pressure equal to the atmosphere, or, if desired, considerably below it, in which latter case, the two systems of evaporating above and below atmospheric pressure will be combined in one series of from twenty to forty boilers. The tubular steam space of the first boiler communicates by a pipe and suitable stopcocks, either with the exhaust pipe of an engine or direct with the boiler or steam generator. From the top of No. 1 evaporating boiler of the series, a pipe conducts the steam arising from the liquid under evaporation into the tubular steam space of No. 2 boiler, which discharges its steam arising from the evaporating liquid, through another pipe into the tubular steam space of No. 3 boiler, and so on throughout the series, the pressure in each decreasing by about from one tenth to one twentieth of the original pressure; for example, if the pressure in No. 1 boiler be that of the atmosphere, that of No. 2 will be (say) one tenth less, that of No. 3, two tenths less, that of No. 4, three tenths less, and so on. The liquid to be evaporated is introduced by a pump and stopcock into No. 1 boiler, and flows through connecting pipes and stopcocks into the others of the series, after which the connections are stopped, and the steam is let into No. 1 boiler, when the process commences; the steam or vapor arising from the last or nearly the last of the series, may be conveyed to a condenser. The requisite amount of vacuum is maintained in each boiler by one or more air pumps and stopcocks, and the contents of each boiler may be discharged through cocks or valves at the bottom thereof.

MACHINE FOR CUTTING TOBACCO, ETC.

This is an English invention, in which timber, tobacco, and various substances are cut, not by a saw, nor by a knife pressing merely against the substances, but by a knife or knife edge made very sharp, and moved in the manner of a saw, so as, in fact, to constitute a saw (whether band, circular, or any other), but formed without teeth; and a stationary sharpener, consisting either of a piece of bone, steel, or other suitable material, or of a succession of those pieces being applied to the edge of the moving knife, so as to make the knife edge rub against such sharpener set at a proper angle with the edge, whereby the edge is constantly sharpened in the same way in which any knife is sharpened on a hone,