

**Deep Bore Holes and Shafts.**

The deepest oil well which has yet been sunk in this country is about twenty-five miles from Pittsburg in the valley of the Monongahela River. A few months ago the hole had been drilled to a depth of 5,532 feet, and then work was suspended on account of an accident; owing to a break in the rope, a thousand feet of it, with the tools, dropped to the bottom and at last accounts men were at work fishing for the lost supplies, says The New York Sun. It is intended to sink the well to a depth of 6,000 feet. This breakage is the chief difficulty in the way of making deep borings. When the artesian well was dug at Grenelle, Paris, a length of 270 feet of boring rod broke off, and fell to the bottom of the hole after a depth of 1,254 feet had been reached. It required nearly fifteen months of constant labor to pick out the broken parts, and the drilling could not, of course, be resumed until they had been removed. At present there are only two borings in the world, which are any deeper than the Monongahela one and they were both sunk in Germany at the expense of the government to ascertain the thickness of the coal measures, and the greatest depth was obtained at Paruschowitz, in Upper Silesia, where the diamond drill has penetrated to the enormous depth of 6,570 feet, and the second is near Schladebach near Leipsig. The following is a list of the deepest bore holes.

	Feet.
Paruschowitz, Upper Silesia.....	6,570
Schladebach, near Leipsig.....	6,265
Monongahela (thus far sunk).....	5,532
Wheeling, W. Va.....	4,920
Sperenberg (gypsum beds near Berlin).....	4,559
Lieth, near Altona.....	4,388
En, near Stassfurt.....	4,241
Lubthen, in Mecklenburg.....	3,949
St. Louis, Mo.....	3,843
Sennowitz, near Halle.....	3,644
Inowrazlaw, Posen.....	3,224
Friedrichsbaue, near Aschersleben.....	3,542

Most of the artesian wells in this country vary from 200 to 1,000 feet in depth, and the average depth of those sunk for irrigation in the western part of the country is 210 feet. When shafts are considered this country has the deepest. One on the Houghton Peninsula was begun in 1895, and will not be completed until 1901. This will be the deepest shaft in the world, and will take that distinction away from the Red Jacket vertical shaft of the Calumet and Hecla mines, which is less than a mile away. This shaft is 4,900 feet deep.

**The Solubility of Argon and Helium in Water.**

Mr. Estreicher has recently published an account of a series of researches which he has made in order to determine the solubility of argon and helium in water. The value given by Mr. Ramsay, in his preliminary note published in 1895, for the coefficient of solubility of helium, makes this to be 0.0073 at 18°C, showing it to be one of the least soluble of the gases, but as a result of further experiments, Mr. Estreicher considers that this coefficient should be doubled or nearly so. The apparatus he uses is the same in principle to that devised by Ostwald, but has two considerable improvements, one of these consisting in the employment of a glass spiral to unite the recipients of measure and absorption, which permits him to make the apparatus entirely of glass, and the whole instrument can be immersed in the water. This envelope of water permits the determination of the exact coefficient of solubility at temperatures varying from 0° to 50° C. He has plotted his results in the form of a series of curves side by side with the curve of nitrogen for comparison. The curve of the solubility of argon is of the usual type, with a decrease as the temperature raises, the value ranging from 0.0578 for 0° C. to 0.02567 for 50° C.

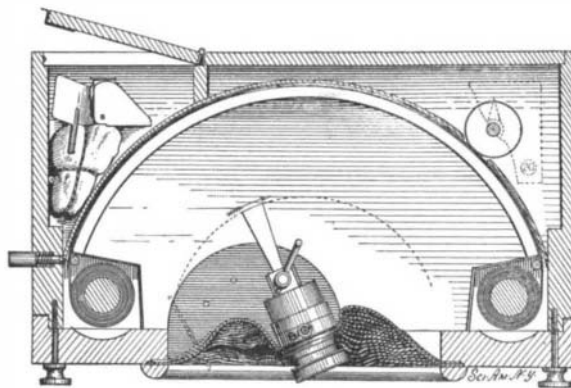
The solubility of helium varies but slightly with the temperature, and the curve shows a minimum near 25° C, the values being 0.015 for 0° C.; 0.01371 for 25°; and 0.01404 for 50° C. The curves of nitrogen and of helium cross at about 30° C, this being the temperature at which they have the same solubility. Above this temperature, nitrogen becomes more soluble than helium.

THE German Archaeological Institute at Athens has just celebrated the twenty-fifth anniversary of its foundation, and the celebration was held in the presence of a number of members of the royal family of Greece. Addresses were made by Prof. Dörpfeld, M. Homolle and other archaeologists. During the last quarter of a century the German Institute in Athens has rendered immense service to the cause of archaeological science conducting researches at Menidi, Tegea, Corinth, Sunium, Thebes, Mitylene, Paros, Athens and Megara, besides participating in important excavations at Olympia, Troy, Tiryns, Orchomenus and elsewhere.

**A CONVENIENT PANORAMIC CAMERA.**

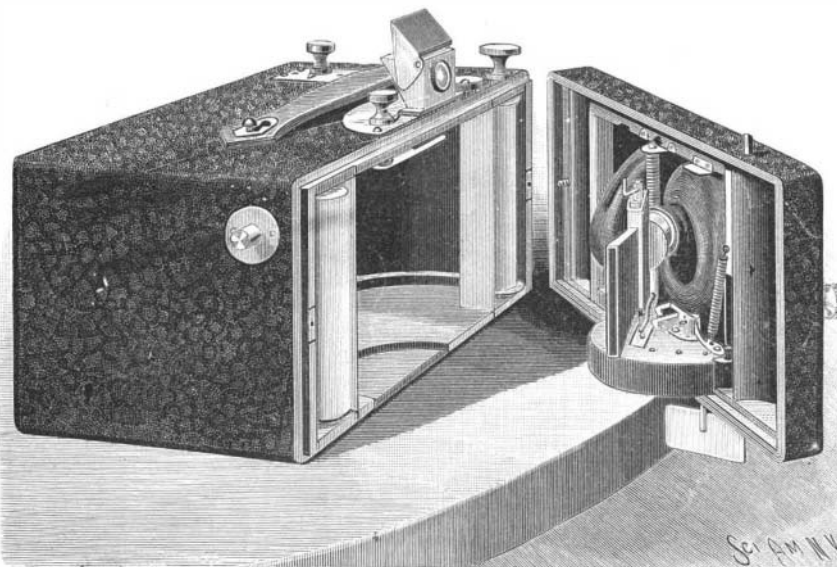
The amateur photographer, equipped with the ordinary 4 by 5 camera, many times sees, in the course of his excursions, opportunities for securing pictures embracing a wider range of view than his camera permits, and generally arranges the instrument to rotate in such a way as to take a succession of separate views, covering an area of 180 degrees; then, by joining the finished pictures in line together, a panoramic view is obtained. A picture of this kind requires a nicety of manipulation in matching to obtain satisfactory results, otherwise the joints will appear too prominent and render the scene imperfectly.

Since the advent of the rollable film and the subsequent improvement known as a daylight cartridge film, different forms of cameras have been devised for making panoramic pictures. Our illustration is a type

**SECTIONAL PLAN OF PANORAMIC CAMERA.**

of one of the latest styles of a panoramic camera called the "Al-vista," just introduced by the Multiscope and Film Company of Burlington, Wis., embracing several improvements which make it very convenient and adaptable for several purposes; at the same time it can be easily and rapidly operated, loaded and unloaded.

The camera is made in two principal parts: first, the lens board, or front, and lens-moving mechanism; and second, the back or box for holding the film, film spools, film punching and registering device, lens index, stop arm, finder, and level. This construction enables the operator at will to take a picture of a uniform width of 4 inches to 4, 6, 8, 10, or 12 inches long. The lens supplants the ordinary focal plane shutter by itself rotating over a half circle and throwing the image 4 inches wide by 12 inches long upon the semi-circular film in the rear. It is pivoted rigidly midway between the front and rear lenses to a vertical shaft operated by clockwork mechanism observed in a casing below the lens, and is protected by a flexible leather front. A flaring radial rectangular tube about 2 inches long projects rearward from the lens tube and carries the picture rays from the lens in the form of a narrow strip of light, something like the flash of a lighthouse lamp, continuously along the rear circular

**A ROLL HOLDER FILM PANORAMIC CAMERA.**

sensitized film. So it is only necessary to control the extent of the revolution of the lens to determine the length of the picture desired. To set the lens, the key seen underneath is rotated, which in turn winds up the clock spring and turns the lens in the opposite direction until it is held by the release lever. At the rear of the lens tube is a small shutter whose projecting arm at the top is arranged to impinge against the stop plate arm to be seen just under the center of the top of the film box. This has an index pointer on the outside and can be quickly adjusted by rotating the knob with fingers. If an exposure 6 inches long is desired, the pointer is set at figure 6; when the lens is released, it rotates until the arm of the shutter strikes the stop arm and thus only exposes a 6-inch section of the whole film. The finder is supported upon a revolvable plate, also having an index pointer, and this

is set at the figure 6 so that the image viewed in it will be parallel to that covered by the lens. Adjacent to the finder is a circular level. A shaft from the clockwork mechanism projects slightly through the bottom of the lens board, or front, and to this may be attached different sized flat pieces of metals which act as fans and regulate the different speeds at which the lens can be made to rotate. There is also provision made for inserting different sized stops in the lens.

The sensitized film spool is put in the extensible spool holder on the left hand and carried over a guide roller and on through the semi-circular channel to the other end, where it is wound up upon the winding spool, against a suitable tension plate. The thumb screw-head for operating this spool is seen on the right hand end. In its movement the film also operates an index cylinder, which tells at the top the number of inches of film reeled off, then on the left is a punch button for punching a hole through the film after each exposure, as a guide to the separation of the pictures.

The lens front is secured to the film box by two thumb screws, one at each end. Every part is accessible, and the matter of friction in the free movement of the lens is reduced to a minimum. The camera is intended to be supported on a tripod, but is provided with a handle, and in emergencies can be held on the arm during exposures.

In an exposure without any fan attached, the lens rotates from one side to the other in 1½ seconds, causing the image to travel over a space of 12 inches, thereby giving one-sixth of a second stationary exposure. Fans lengthen the exposure ¼, ⅓, ⅔, ½ seconds, according to size used. In the rear is a compartment for holding the finder, fans, stops and extra spools of film.

From what has been said it will be noted that the camera is a very useful instrument, in view of the fact that panoramic or smaller sized pictures, time or instantaneous, can be quickly and easily made, according to circumstances.

**A New Ore of Nickel.**

A new nickel, believed to be of great commercial value, has been discovered in the copper ore district of Houghton, Mich. It has been named Mohawkite, from the mine in which it was found. It was at first supposed to be a copper sulphide, but chemical examination indicated that it was a new mineral. It possesses a silvery metallic lustre when freshly broken, with very irregular fractures. Chemical analysis shows that it is an arsenide of copper, similar to the domeykite, in connection with which is also found an arsenide of nickel. The possibilities offered by this combination are very great. Copper is more than ever a valuable metal and is now commanding a high price, and nickel is now used in a large number of industries where twenty-five years ago a few tons only were used, in the subsidiary coinage of the United States, so that the discovery of new ores and new bodies of an ore of nickel, may be regarded as of the greatest possible importance. It is, however, in the field of alloys that Mohawkite will probably be more valuable. The assays, so far as determined, reveal an almost ideal composition for an alloy of copper and nickel, for which there is already a good demand. The new mineral can also be turned into commercial products from the ore almost without waste.

**The International Photographic Congress.**

The Committee in charge of the International Photographic Congress which is to be held in Paris, has recently established the following programme of the questions to be considered.

1. Photographic plates, classification and sensibility in various conditions of use.
2. Photometry; the practical study of the subject as applied to photography.
3. Characteristics and classification of optical glass.
4. Lenses and diaphragms; systems of numbering.
5. Questions relating to photographic shutters.
6. Classification of glass plates used in photography as to thickness.
7. Dimensions of cinematograph bands.
8. Expression of photographic formulae.
- 9.

Project for decimal classification in the bibliography of the subject.

10. Legal protection.
11. Proprietary rights and licenses.
12. Questions relative to photographic documents and archives.

If it is desired to communicate any documents or researches relating to these or like subjects, a resumé should be addressed to the secretary of the committee before the 15th of June in order that it should be admitted to the sessions of the congress. The secretary, M. S. Pector may be addressed at 9 Rue Lincoln, Paris.

AN exhaustive exhibit of United States postage stamps will form a part of the Paris Exhibition. It is said to be one of the most complete ever made, embracing every variety issued since the inauguration of the postal service.

