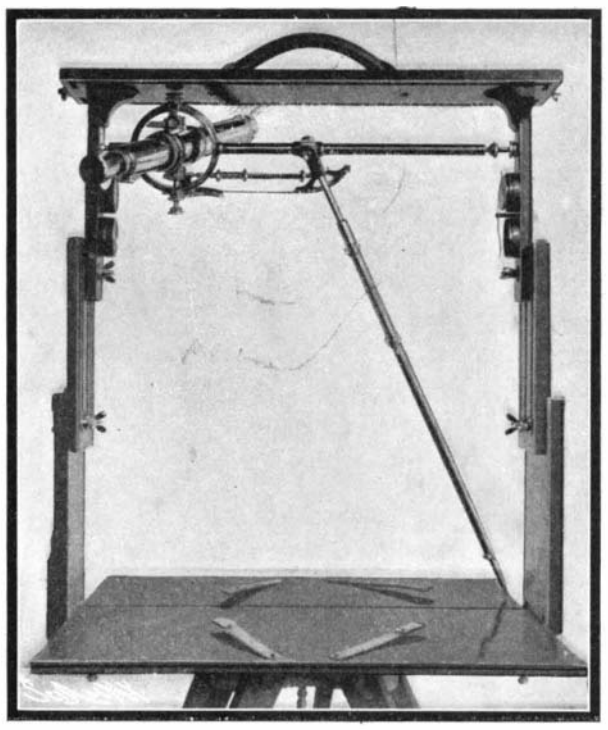
THE PERSPECTARTIGRAPH—A NOVEL DRAWING INSTRUMENT.

The instrument illustrated in the accompanying pictures is an exceedingly ingenious one. It was invented with the idea of making it possible to draw in perspective mechanically, with little or no previous instruction. The inventor's idea has been well worked out and brought to a practical conclusion, as experiments with his instrument in the office of the Scientific American have demonstrated. The apparatus is the invention of Mr. Otto Eichenberger, of Geneva, Switzerland, who is at present in this country introducing it. It will be found useful to anyone who wishes to draw accurately in perspective landscapes, buildings, or objects of any sort.

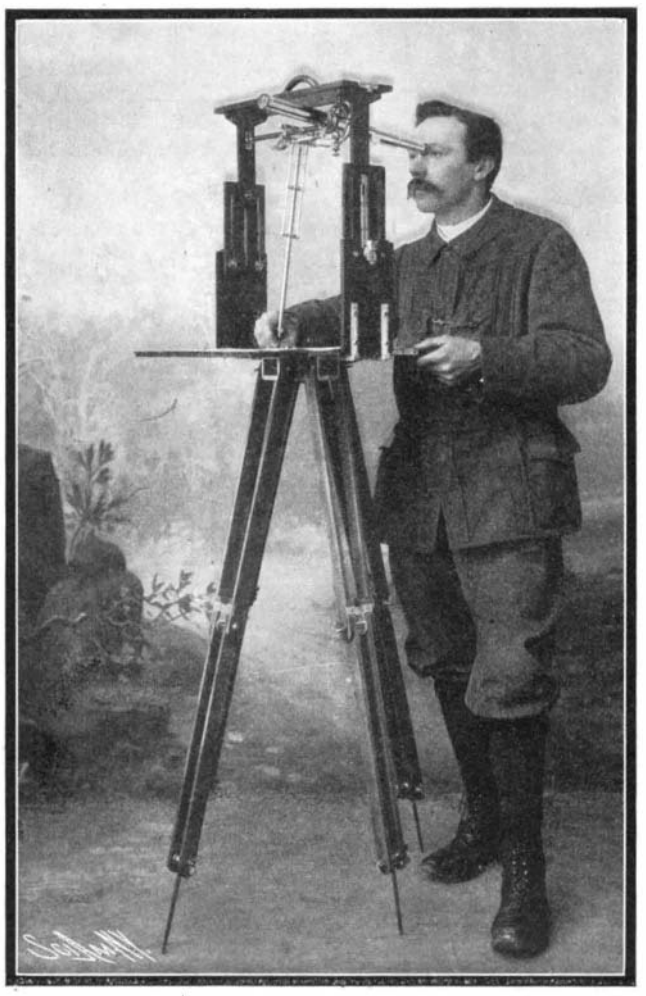


A NEAR VIEW OF THE INSTRUMENT.

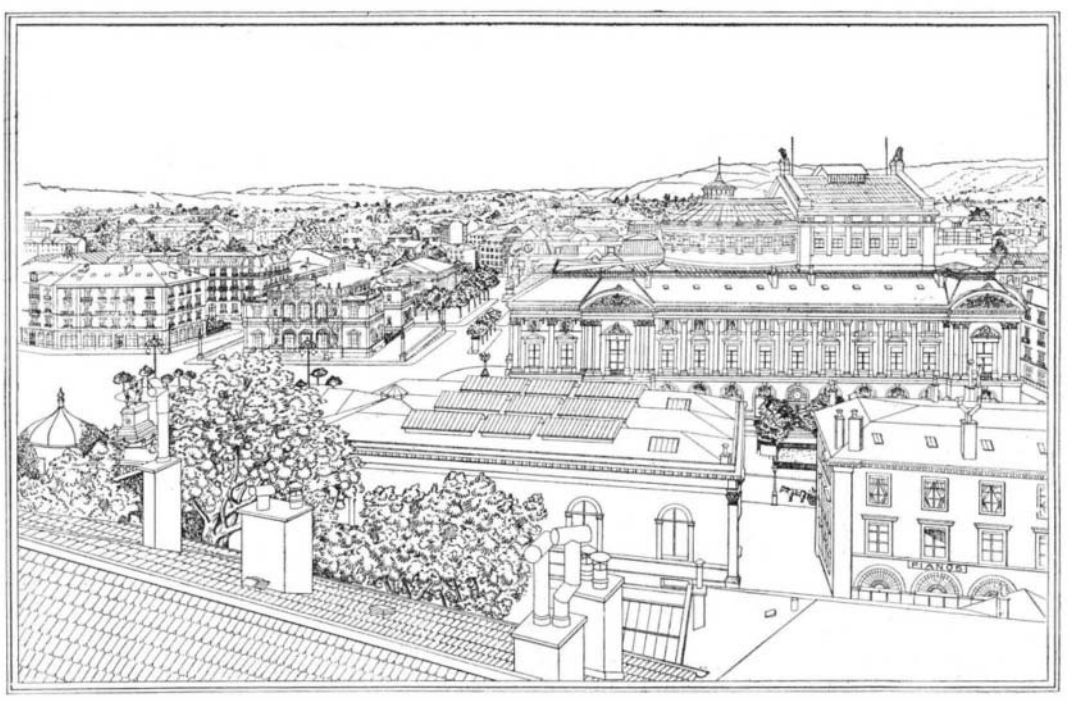
The apparatus consists of a folding box which opens and forms a table for the paper. The two sides of the box are made extensible, and they carry near their upper end a transverse rod mounted so as to turn easily. A telescope provided with an eye-piece at one end and two hairs crossing at right angles at the other, is mounted on two vertical pivots in the center of a ring which forms part of this rod, and is located near one end of it.

The telescope is connected to another frame, which is pivotally suspended from a pin attached to the transverse rod at right angles to the ring that supports the telescope, and this frame carries at its lower end a pencil-holder, the pencil of which is capable of sliding up or down in it, so that the point of the pencil is always in contact with the paper, as the holder assumes different angles while following the movement of the telescope. If the telescope is moved back and forth in a horizontal plane, for example, it will, since it is connected with the pencil-holder through a universally-jointed rod, cause the latter to describe an arc in a vertical plane and its pencil to draw a straight line across the paper below the transverse rod and in the vertical plane with it. A vertical movement of the telescope will cause a line to be drawn at right angles to the one just mentioned. The movement of the telescope in any direction is thus obtained by the combination of its vertical and horizontal movements, and is simultaneously marked on the paper. The line drawn by the pencil is always proportional to the distance moved through by the end of the telescope, as the angle described by the pencil-holder and the telescope is the same. As a result of this, the apparatus makes a true perspective drawing. The telescope is a long-range one, magnifying ten times. It has a short-focus lens and one for long or medium distance work. The size of the drawing depends on the distance of the instrument from the object, as well as on the size of the latter. An object placed 45 centimeters (17.71 inches) away from the axis of suspension of the telescope will be reproduced in its natural size, since this axis is also 45 centimeters above the drawing board. The perspectartigraph instrument illustrated is capable of including within its field an angle of 45 degrees, and of making a drawing 17.71 inches long by 18.89 inches high. A complete circular panorama 141.73 inches long can be made by swinging the instrument on its tripod, and dividing the entire horizon into eight sections.

The operation of the instrument is extremely simple and very readily learned. The draftsman holds the pencil in his hand and moves it over the paper in such a way as to make the intersection of the hair lines in the telescope follow the outline of the object to be copied. With practice, very neat work can be done with the instrument, as the panorama of the Alps and the view of Geneva made with it bear witness. The instrument can be made use of by architects for readily making a perspective view of a house from the plan and elevation drawings of the same; and its inventor believes it will have a wide field of usefulness for teaching children how to draw in perspective, and aiding artists in obtaining true perspective in all their works. He is at present designing a simplified form of his instrument for these purposes.



DRAWING FROM NATURE WITH THE PERSPECTARTIGRAPH.



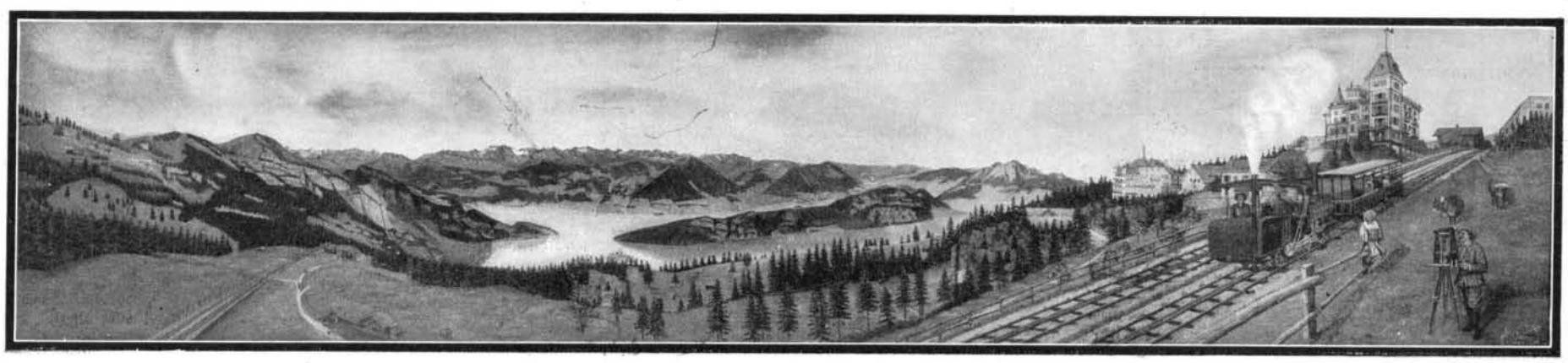
A VIEW OF GENEVA, DRAWN WITH THE PERSPECTARTIGRAPH.

Obtaining Metal Powders by an Electrolytical Method.

Prof. A. Zamboni (Elettricità, No. 4, 1903) has succeeded in obtaining aluminium, sodium, potassium, etc., amalgams, decomposable in water. His method is based on the fact that when electrolyzing a solution of metallic compounds by means of a mercury cathode, the corresponding amalgam is obtained; this process may be applied even to such metals as are commonly regarded as inamalgamable, such as, for instance, platinum and iron. The amalgams thus obtained are spongy substances, filled with mercury particles, and have specific weights between those of mercury and the corresponding metal. If the cathodic vessel has a permeable bottom, the amalgam will rise to the surface, where it may readily be removed; if the bath contains different metals, the density of the current will determine the metal deposited. The amalgam to be obtained by this way may accordingly be electrolytically purified, not only from inamalgamable bodies, but as well from any different metals. By compressing in linen bags the amalgam thus economically obtained, nearly pure mercury will be obtained, the amalgam undergoing a partial decomposition, when a readily pulverized substance will remain, made up of amalgam and metallic powders. If this mass be distilled at a temperature below the melting point of the amalgam, the mercury is found to separate from the metal (especially in the case of iron and related metals), whereas the latter remains in a spongy, friable state, being capable of reduction, when pounded to extremely fine powder. When choosing for this distillation convenient atmospheres, different metallic compounds will be obtained. If, for instance, iron amalgam be distilled in a reducing medium, pyrophoric iron will be obtained, susceptible of being converted into common iron by a convenient treatment. Oxidizing atmospheres will give some so far unknown iron oxides and protoxides.

The above process was found in the course of an investigation of the Edison accumulator; it was originally intended to afford a ready means of preparing ferric oxide.

During the month of February 54,758 packages of exhibits were received at the World's Fair grounds. More than six hundred exhibitors are now on the grounds installing their exhibits.



PANORAMA OF THE ALPS AS SEEN FROM MOUNT RIGHI. DRAWN WITH THE PERSPECTARTIGRAPH LAST SUMMER.