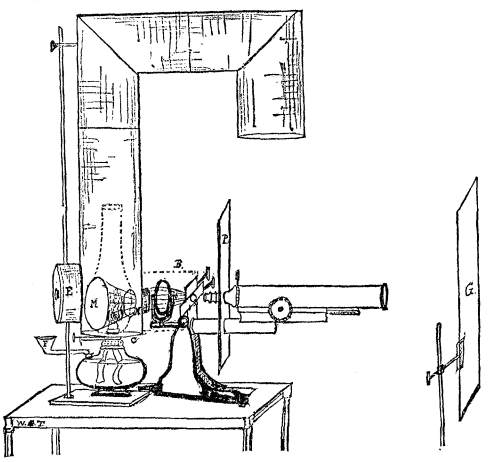
laboratory, to hold glass retorts, tubes, etc. The iron rod rests upon the floor, occupies very little space, and can be moved to any convenient focusing distance. A similar stand supports the horizontal elbow of the stove-pipe. The tube of the microscope should be blackened inside as in micro-photography. The microscope is handled in every way as usual in respect to stage movement, fine adjustment, etc.

The great difficulty with the apparatus consists in trying to prevent the reflection of superfluous light. To obviate this, a pasteboard box, *B*, six by six by eight inches, is readily cut to fit closely over the plano-convex lens and the back of the microscope stage, thus enclosing the microscope reflector, and allowing it room to be focused properly when the lid of the box is removed. It is also advisable to fit a sheet of pasteboard, *P*, tightly over the microscope tube at right angles to it, in order to cut off the rays which escape around the object illuminated, pass along the axis of vision outside of the tube, and tend to blur the image on the screen.



B, outline of paper box to enclose mirror; *C*, collar to support stove-pipe; *E*, elbow through which chimney may be removed; *F*, funnel for filling lamp; *G*, ground-glass screen; *M*, reflector inside of stove-pipe (posterior surface); *P*, pasteboard screen; *X*, hole in stove-pipe where lens is inserted.

Dr. J. West Roosevelt (to whom the larger part of the ingenuity of this apparatus is due) and the writer have for some time made constant use of it for instructing students. Physiological, histological, pathological, and botanical specimens may be clearly shown. A number of students can look on at once. The slides are rapidly changed, and students and instructor may always be sure that they are discussing the same particular cell; which, unfortunately, is not the case when a beginner in the use of the microscope looks through the instrument alone. The apparatus may readily be constructed by any one for about five dollars: it is easily portable, and always ready for use in any darkened room. It is possible to throw the light from the lens *X* directly upon the object without the intervention of the microscope reflector, but the reflector facilitates focusing. Objectives of wide aperture are preferable. With some lenses, the use of the eye-piece adds distinctness, but in most cases it cuts out too much light. An Abbe illuminator may be inserted. The image on the screen *G* is seen most distinctly upon the farther side; and some objects become clearer if the screen be moistened with water, or covered with a thin coat of transparent varnish laid over the ground surface. The image may also be received upon white glazed paper, but this is less clear.

For demonstration on a larger scale, an oxy-hydrogen light can of course be used, or some form of electric light. The arc-light is not sufficiently steady, and the incandescent light requires a great deal of storage-room for batteries. The light above described shines with thirty-six candle power, is clear and steady, and serves every ordinary purpose: the circulation in the frog's foot, varieties of epithelium, injected lung tissue, tubercle, plant-cells, etc., may all be clearly shown. The colors of stained or injected specimens come out distinctly.

The principle of this apparatus is by no means new; but its application is made so easily within the reach of any one who owns a microscope, that it is especially recommended to instructors in schools and colleges.

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QUINTINO SELLA.

QUINTINO SELLA was born July 27, 1827, at Mosso Superiore, a little village on the Biellese mountains, and pursued his early studies at Biella, evincing a special aptitude for the classics. Later he completed a course of study in mathematics and physics at the Turin university, and obtained the degree of hydraulic engineer. He then entered the school of mines at Paris, and passed the following five years, partly in study, partly in travelling through Germany and England. His studies were much interrupted by the political excitement of 1848, and he was an interested witness of all the stirring events from the fall of Louis Philippe to the proclamation of the second empire. At Paris he made the acquaintance of Gastaldi, with whose co-operation he later founded the Valentino museum. After his return to his home in 1852, he would have entered the service of the royal corps of mining engineers; but Savoy being the only district vacant, and not being able, on account of private business and his somewhat impaired health, to reside there during the winter, he remained at Turin, where he became professor of geometry at the technical institute, and where he married Clotilde Rey. In June of the next year he went to Savoy, and remained till the autumn, when he was appointed temporarily professor of mathematics at the university of Turin. In 1856 he was admitted into the corps of mining engi-

neers, and was given charge of Turin district and the regency of that of Coni.

In 1859 he was made a member of the council of public instruction, and in 1860 of the council of mining engineers. Since 1856 he had had the care of the mineralogical cabinet of the technical institute, which later became the school of application, and where in 1860 he was appointed professor of mineralogy. Here his active scientific work ended. Sella's political career began in the following year, when he was elected representative of Cossato (Biellese), in which capacity he was serving at the time of his death. In the same year also he was general secretary of the minister of public instruction, and held the office for some time gratuitously. Three times he was the minister of finance, the first time in the Rattazzi cabinet, when he had had no experience in politics, and as the successor of Cavour. Then began that gigantic but successful struggle with the enormous debt of the Italian treasury which saved the national honor and fortune. To him also was largely due the construction of the Palazza dei finanze.

In 1873 he withdrew for an indefinite time from politics, and accepted the presidency of the Accademia scientifica dei lincei, and obtained its removal to the Corsini palace.

His mineralogical and geological publications were numerous. One of the most important of the former was his account of the mineralogical industry of Sardinia, in which he gave the general statistics and description of the mines and smelting-works of the island, with their technical and economical condition, and proposed a plan for their improvement, and in which he touched upon the important question of the ownership of mines. In 1881 he was made honorary president of the international geological congress; and at that time, in conjunction with Professor Capellini, he founded the Italian geological society. His principal geological work was his map of the Biellese district; and he was intending to make a detailed study of the Biellese Alps in the interests of geology. He was the founder and president of the Italian alpine club, and of his work in this branch much might be said.

So passed away, in his fifty-seventh year, a man the useful period of whose life, coinciding with that of the re-organization of Italy, contributed much to its formation. Italy was not unmindful of his services. Public funeral honors were granted him, parliament decreed a national monument at Rome, and various testimonials were offered by different cities and organizations, among which may be mentioned the medallion presented by the royal corps of mining engineers.

Our portrait represents him at the age of thirty-six.