(transparent pink crystals, one measuring 110 × 75 × 65 mm. and weighing 850 grams), lepidolite, pink andalusite, muscovite, orthoclase and quartz.

The field is certainly a very interesting one and is well worth further study. Many of the minerals occur in good crystals having rich combinations of forms, and the color of some of the specimens suggests interesting chemical possibilities. It is probable that with further exploration the list of minerals will be considerably increased.

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A NOTE ON RHIZOCTONIA.

The bean crop in the vicinity of St. Louis was severely injured this year in many instances by *Rhizoctonia,* sp. which not only attacked the stems and larger roots of the plants, but also produced brown, sunken areas on the surface of the pods, penetrating the latter and discoloring the seeds. An examination of a number of seeds whose surface was discolored disclosed the fact that the mycelium of the fungus had established itself in the seed coat and in many instances had formed minute sclerotia there without rotting the seed or even penetrating the cotyledons. Pure cultures of *Rhizoctonia* were easily obtained from a number of mature discolored beans which had been carefully removed from diseased pods. The presence of the fungus does not prevent the germination of the seed, as was proved by a test. From this it follows that a very common means of disseminating *Rhizoctonia* on the bean is through diseased seed, and that seedsmen should be careful not to send out discolored beans.

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QUOTATIONS.

THE CARNEGIE INSTITUTION.

It is worth pointing out that the almost inevitable outcome of the present policy will be a centralization of a very objectionable kind. If the activities of the Carnegie Institution were to be wholly confined to aiding individuals here and there, that end could have been best attained by dividing the endowment among the leading institutions of learning, under such restrictions as might have been necessary. Every such organization could then have determined for itself, better than a central one at Washington, what the needs of its professors were, and what might be the importance of their work. It could have established branch stations at least as well as can the Washington institution. It could have sought out the exceptional man with even better chances of finding him, because its field of knowledge would have been wider than that of any central authority. Each could, for itself, have selected the best research-assistant to be found.

Now, instead of this result, we actually have a central authority passing judgment upon the relative importance of the work being done at all the institutions of learning from which applications may come, and aiding them, or refusing aid, according to their judgment. One very probable outcome of this has not been sufficiently considered. It must tend, to a greater or less extent, to diminish the spirit of individual effort, just as gifts are apt to do in many other walks of life. This effect will be intensified by a very obvious and reasonable provision announced by the institution as governing its action. It does not propose to undertake anything that is being well done by other agencies. It would, of course, be superfluous to assist a professor in cases where the patrons of his own institution could be induced to do so. The latter will naturally not be very liberal in giving their funds if the Carnegie Institution can be successfully appealed to. If the appeal is a failure, that failure will be a reason against the project in the mind of a possible donor. The dilemma will be that of Omar: If the Carnegie Institution can be induced to support your work, our aid is not needed; if it can not be so induced, the object is not worthy of our support. Of course, it is not claimed that this consideration will be universal, or will be operative immediately and in all cases. But to suppose that it will never be operative in any degree is contrary to every principle of human nature.

The progress of knowledge has brought us to a point where our nation needs the services of a body of men who shall be engaged in work of a distinctively different type from that carried on in our traditional institutions of learning, a work which belongs peculiarly to the present and future, because it was not possible in the past. Looking at our intellectual history, we have grown from the high school of our revolutionary ancestors to the college; from the college stage we have grown to the university stage. Now we have grown to a point where we need something beyond the university. We want an institution at the city of Washington at which shall be organized a system of research on that higher plane and larger scale which the progress of experimental science and observational knowledge now requires. Such a work would be at a disadvantage in being connected with any existing university for the same reason that the college was at a disadvantage when grafted on the preparatory school, and for the same reason that our universities are now at a disadvantage in being grafted upon the colleges. What we want might be appropriately called the National Research University. If the Carnegie Institution is not to grow into anything of this kind, is there not among us some possessor of great wealth ready to become its founder?—Professor Simon Newcomb in *The North American Review*.

EXPERIMENTS IN FLYING.

IN October last we resumed the trials on the Kill Devil practice ground with the machine which we had used during the previous year, and succeeded in making flights in which the operator remained in the air over a minute, at one time being suspended 1 minute 11.80 seconds. While carrying on the experiments, our power machine was under construction. In dimensions it measures a little over 40 feet from tip to tip of the wings, of which there are a pair. Its length fore and aft, to use a nautical phrase, is about 20 feet, and the weight, including that of the operator, as well as the engine and other machinery, is slightly over 700 pounds. We designed the machine to be driven by a pair of aerial screw propellers placed just behind the main wings. One of the propellers was set to revolve vertically and intended to give a forward motion, while the other underneath the machine and revolving horizontally, was to assist in sustaining it in the air.

We decided to use a gasoline motor for power, and constructed one of the 4-cycle type, which, revolving at a speed of 1,200 revolutions a minute, would develop 16 brake horsepower. It was provided with cylinders of 4-inch diameter and having a 4-inch stroke and intended to consume between 9 and 10 pounds of gasoline an hour. The weight of the engine, including the wheel, is 152 pounds.

We had calculated that this amount of mechanical power would be sufficient to maintain the machine in the air, as well as to propel it, the calculations being the result of gliding experiments, which showed that when the wind was blowing at a rate of 18 miles an hour the power consumed in operation was equal to 1.5 horse-power, while with a wind of 25 miles an hour it represented 2 horse-power, being capable of sustaining a weight of 160 pounds per horse-power at the 18-mile rate.

After the motor device was completed, two flights were made by my brother and two by myself on December 17 last. The apparatus had been placed on a single rail track, built on the level, the track supporting it at a height of eight inches from the ground. It was moved along the rail by the motor, and after running about 40 feet ascended into the air. The first flight covered but a short distance. Upon each successive attempt, however, the distance was increased, until at the last trial the machine flew a distance of a little over a half mile through the air by actual measurement. We decided that the flight ended here, because the operator touched a slight hummock of sand by turning the rudder too far in attempting to go nearer to the surface. The experiments, however, showed that it possessed sufficient power to remain suspended longer if desired. According to the time taken of each flight a speed varying from 30 to 35 miles an hour was attained in the air.

We should have postponed these trials until the coming season, but for the fact that we wished to satisfy ourselves whether the ma-