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## To Members and Chapters of the Agassiz Association:

In the January number of the "Swiss Cross" you have seen the notice of a new *Course of Mineralogy for Young People*, which, although accessible to all who wish to study this branch of Natural History, has been especially planned for the members of the Agassiz Association. The course is divided into four grades. In each grade the student is supplied with a collection of 25 specimens and a small text-book containing the necessary directions for studying the minerals; also a description of the minerals in the collection. By following the directions and carefully examining the specimens, the student is able to find out for himself the name and nature of each mineral; he then draws up a report and sends it to me; if the report is found correct, the student can try the next higher grade.

In the *First Grade*, the student learns to determine minerals by examining their hardness, lustre, color, transparency, streak, taste and odor; all he needs for this is a streak and scratch plate, which is furnished with the collection, and a pocket knife. The collection for this grade has been selected with a view of enabling even those who do not care to go further in the course, to determine most of the common stones and to get an idea of the relations and differences that exist between minerals.

In the *Second Grade*, the easier chemical tests are introduced, such as test with hydrochloric acid, flame tests, heat tests with the open and closed tube. Part of the necessary tools are furnished with the collection.

In the *Third Grade*, the student learns how to study crystals and how to watch the process of crystallization. He is also initiated into the art of using the blow-pipe for mineral analysis. The collection in this grade consists principally of specimens showing characteristic crystal forms.

In the *Fourth Grade*, the student is made acquainted with the manner of determining the ores of the useful metals, and he also learns to find the specific gravity of minerals. The collection contains, of course, the necessary minerals for these lessons.

While I invite all members who have not studied Mineralogy yet, to give this fascinating science a trial, I desire to make a few suggestions concerning the method of study.

The course can be begun at any time, and either by single members or by whole chapters, or by classes formed in the chapters.

Now is a good time to begin, because the study of the First Grade will prepare you for profitable out-door work in spring and summer.

Do not try to get through the course in as short a time as possible; rather aim at thoroughness.

Do not attempt to undertake that study with one single book and one single set of minerals for the whole class or chapter; this would defeat the object of this course, which is to make of each student an investigator, able to do his own independent work. Every student should have his own book and collection, ready at any time for reference and comparison. It is only by the frequent handling and examination of your specimens that you can become experts, able to tell many, indeed most of the minerals, at sight.

In many chapters there will be some members already somewhat acquainted with minerals, who will recognize at once some of the specimens and will be delighted to name them or label them for their friends. May I kindly ask those not to do it? Your pride is natural and pardonable, but if you wish to be really kind to your friends let them have the satisfaction of owing their knowledge to their own exertions.

The student who gets the least outside help will get the most benefits from the study.

What is the use of forming classes if every member should study for himself?

The knowing that some of our friends are engaged in the same work we are, adds to it zest and encouragement.

The study offers many interesting topics for discussion in the class or chapter meetings, and many facts can be learned here which cannot be treated in detail in the printed directions for the course.

As the Erie Chapter has worked at this course for some time, it may be interesting to you to learn how the work is organized here. Each member of the mineralogy class has his or her own collection and book, and the studying of the specimens is done at home. At the same time the class meets once a week. The members generally find, arranged upon a board, about a dozen specimens of minerals and rocks; these have no reference to any of the grades of the course, but are simply there for examination and description. Each member describes each specimen, and a general discussion and criticism follows. Members often bring interesting specimens to the meeting. In summer, excursions are taken with hammer and collecting bag, and every stone heap is investigated. Some question or topic is generally given to be looked up and discussed at the next meeting. These are samples:

What is a mineral?

What are the different varieties of Calcite? How formed? Their uses?

Where is Graphite found? Its uses?

Are most of the crystallized minerals found in stratified or unstratified rocks? Why?

How is lead extracted from Galenite?

How is iron extracted from its ores?

These will suffice to show that there is no trouble in getting subjects for discussion at the meetings. Any book of reference may be used to find the answers to these questions.

After the members of a class have determined all the minerals in their collections, they might exchange their sets and see whether they can recognize every mineral in the other sets.

In making up your report, do not copy the properties enumerated in the description of the minerals in the book, but take your specimens one by one and make the report from your own observation. If you find in your specimen some peculiarity or property not mentioned in the book, do not fail to mention it in your report. I can always tell whether a report has been made after careful investigation or not.

The collections are arranged in neat wooden boxes  $7\frac{1}{2}$  inches square and  $1\frac{1}{4}$  inch high, and divided by cross partitions into 25 compartments. The cost of each collection, with accompanying text-book, is \$1.00, or, postage prepaid, \$1.25. Single sets are cheapest sent by mail. If postage is not prepaid with the order, the sets will be sent by express; the latter way of sending will be generally found the cheaper if two or more sets are sent to one address.

*As an inducement for Agassiz Chapters to form classes now, I offer to prepay the expressage if at least six sets are ordered at one time and to one address. This offer is good until April 1, 1889.*

**G. GUTTENBERG,**

ERIE, PENN'A.