Introduction

Rock and Mineral Clubs (Part I) provided ideas for the initial organization of rock and mineral clubs. In order for club members to develop this avocation to its fullest, a number of basic skills have to be mastered and some equipment must be acquired. The basic skills include rock, mineral and fossil identification and collection, as well as skills in lapidary such as tumbling, cutting, shaping and mounting gemstones.

Skill-Building Topics

Topics are suggested in Table 1 to aid in the development of the basic skills necessary for pursuing the broad range of interests associated with rock and mineral clubs. Each topic is cross-referenced with corresponding resource material found in the reference section. It is necessary that some activities of a club focus on acquiring the necessary library materials and equipment for pursuing these topics.

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Skill Building Activities

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Lapidary Equipment

While many of the activities outlined need only introductory knowledge and standard geological equipment to perform, much interest can be generated through an introduction to lapidary procedures. A small two-barrel tumbler is absolutely necessary to initiate interest in lapidary. As interest in lapidary grows, better equipment can be acquired. Fund-raising activities will be necessary to generate the funds for equipment purchases. It will also be necessary to consider appropriate floor space requirements (with electricity and water) for grinding wheels. Tips concerning these considerations can be found in Sintankas’ *Gem Cutting Lapidary Manual* (L-2).

Another important aspect of the lapidary equipment problem is the number of participants. Care must be taken not to overload work areas. An average meeting period may find groups involved in mineral identification, jewelry design and construction, tumbling, and other activities, in addition to cutting and polishing. If several activities are run concurrently, the equipment work-load can be reduced. A good rule-of-thumb is to allow grinding and polishing for

### Table 2
Lapidary Equipment

1. **Tumbler**
   The greatest flexibility is offered by a double drum unit with each drum having a 12 lb (1/2 gal) capacity.

2. **Combination Cutter and Polisher**
   This equipment allows both cutting and polishing to occur simultaneously in one compact unit. Separate units work as well if floor space is available. An adequate sawblade diameter is 10 inches.

3. **Polishing Arbor**
   Polishing is a time consuming task, an extra arbor with 100 grit and 200 grit wheels will ease the work-load. An arbor with two splash wheels, a 1/3 HP 1/2-inch shaft motor with a three-step pulley (2, 3, and 4 inches) is adequate.

4. **Wheel Dresser**
5. **Template**
   One standard size template is necessary to mark desired shapes.

6. **Lapidary Pencil**
   Aluminum pencils are necessary to mark shapes before cutting.

7. **Consumables**
   a. A roll of wet-type 600 grit sandpaper is needed for the sanding wheel.
   b. An extra super-charged diamond blade (10 in x .040 in x 5/8 in) is useful.
   c. Zinc-oxide abrasive bars are needed for buffing agents.
   d. Four sticks of clamping wax are needed to mount stones for grinding and polishing.
   e. Tumbling grit of various sizes and types will be needed in tumbling.
   f. Epoxy will be needed for cementing lapidary sets.
one-third of the membership, if the membership is twenty-five or more. The basic lapidary equipment needs for a twenty-five member club are listed in Table 2. Better equipment may be acquired as the needs of the club become more sophisticated.

Conclusion

Organizing a rock and mineral club provides interesting avocational challenges for the youth in any community. Recommendations have been presented for organizing, supplying and leading such groups. Each community offers unique opportunities and settings for every club. The success of a club will depend upon the motivation of the club membership and the utilization of community resources to their fullest. Such clubs offer rewarding experiences for everyone involved and enrich the cultural diversity of a community.

Selected References and Suppliers

Careers


V-5 *So You Want to Start a Rock Shop* by The Victors. (no date). Victor Agate Shop, South 1708 Cedar, Spokane, WA 99203. A complete guide to the business of rock shops.

Crystals


**General Geology**


**Lapidary**


L-3 *The Art of Barrel Tumbling* by Joe Warzin. (no date). 555 East 185th Street, Cleveland, OH 44119. A complete guide of tumbling, well written. Grade 5 and up.


L-5 *Faceting for Amateurs* by Glenn and Martha Vargas. 1969. Desert Printers, Palm Desert, CA. Complete faceting guide for the beginner or professional. High School and up.

L-6 *The Lapidary Journal* by Lapidary Journal, Inc., 3564 Kettner Blvd., P.O. Box 80937, San Diego, CA 92318. Monthly magazine with the latest in equipment, large number of supply house advertisements and current events within adult lapidary clubs. April issue is called the *Rockhound Buyers Guide* and is encyclopedic in scope, covering dealers, manufacturers and list of current clubs.

L-7 *Gems and Minerals*, P. O. Box 687, Mentone, CA 92359. A monthly magazine geared toward jewelry making.

L-8 *Mineralogist*, P. O. Box 808, Mentone, CA; Bimonthly. Covers all aspects of the earth sciences with greatest emphasis on mineralogy and paleontology. Also articles on lapidary work and jewelry making.
Maps

M-1 Iowa Geological Survey. 1969. *Geologic Map of Iowa.* Iowa City, IA 52242. The map shows the age and distribution of Iowa's bedrock formations.


M-3 United States Geological Survey, Department of Interior, 1200 South Eads Street, Arlington, VA 22202 (maps of areas east of Mississippi River), Federal Center, Denver, CO 80225 maps of United States. Free pamphlet *Topographic Maps.*


Paleontology


Pamphlets and Charts

There are three major sources of assistance for obtaining pamphlets and charts.

PC-1 Bureau of Mines, United States Department of the Interior, 4800 Forbes Avenue, Pittsburgh, PA 15213.


Rocks and Minerals


R-5 *1001 Questions Answered About the Mineral Kingdom* by R.M. Pearl. 1968. (Revised edition) Dodd, Mead and Co., NY. Informative answers to questions in the mineral world. Grade 6 and up.


Suppliers


S-2 Baskin and Sons, Inc., 732 Union Avenue, Middlesex, NJ 08846. Complete hobby supplier, quality merchandise.
New Environmental Education Resource

* * *

Environmental Education Process for Iowa Schools by Bernard Clausen and David McCalley of the University of Northern Iowa has been published recently by the Curriculum Division of the Iowa Department of Public Instruction. The 80-page book is a handbook written to explain and illustrate the goals, objectives, and methods of environmental education. It is designed to help schools organize their own programs and curricula. Strong emphasis is placed upon the use of interdisciplinary process and the integration of environmental/conservation education into all subject areas at all grade levels.

Teachers and administrators will find the book useful in a number of ways depending upon their level of experience with the process. Those who are not familiar with the scope and approach of environmental education will find condensed explanations supplemented by examples. Experienced persons will be able to compare their programs with the guidelines presented and may discover techniques for improvement and expansion to involve more people.

Chapter titles are: Environmental Education — A New Process for Teaching Fundamentals; Recognizing the Iowa Environmental Problem; Strategies for Implementing Environmental Education Programs; Focus on Land Use — An Integrative Study; Iowa and International Environmental Education; Learning Activities; Teaching Resources and References.