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SCIENCE NOTES

Science Educators Express Concern over Weaker Certification Requirements

The Education Committee of the Iowa Academy of Science, the Executive Committee of the Iowa Science Teachers Section, and the Iowa Council of Science Supervisors met recently to review the proposed revisions in rules for teacher education and certification. They expressed concern about a number of changes that are being planned in the area of science certification.

One area of concern is the reduction of the present requirements for endorsement to teach science. Currently, the minimum science preparation is 24 semester hours in any one area. It has been proposed that only 20 semester hours be required. Addition of a second area, however, would be increased from 12 semester hours to 20. This would be an increase only for those students adding physical science to biology endorsement or biology to physical science endorsement. The grouping of all physical sciences into one endorsement area represents a great reduction from the present standard.

Another area of concern is the elimination of the distributional requirement within the physical sciences. This would allow people with a chemistry background and no preparation in physics to teach physics. Teachers with only a physics background could teach chemistry. One of the strengths of the current approval standards is that minimum preparation is defined within each science discipline, i.e., biology, chemistry, physics, earth science.

The educators also noted that the proposed plans have no specified standard of preparation for earth-science teachers. The earth sciences are not clearly defined as in the physical sciences in the proposed standards.

In a letter to the Department of Public Instruction, the science educators also emphasized that they believe that the preparation of every science teacher should include preparation in several science areas.

The letter pointed out that it is absolutely critical that science teachers understand the process of science. Extensive laboratory experience and practice in developing scientific thinking skills, including experience in upper level science courses, are necessary for the development of this understanding. For this reason, they have recommended that endorsement to teach in **any** of the sciences at the high school level (grades 9-12) be based on the completion of a science major. Furthermore, they feel a minimum coursework prerequisite should be set for any science discipline before the teacher is endorsed to teach in that discipline.

Both national and state reports, e.g., "A Nation at Risk", and "The First in the Nation", call for the improvement of the preparation of science teachers as a means of improving science education. The educators deem it incongruous to reduce the minimum requirements for preparation of science teachers when inadequate preparation has contributed to the present crisis in science education.

The National Science Teachers Association (NSTA) has prepared a position statement recommending standards for the preparation of science teachers at all levels. These standards have been adopted by the National Council for Accreditation of Teacher Education (NCATE) and adopted as policy by the Association for the Education of Teachers in Science (AETS). NCATE will begin using these

SCIENCE NOTES

standards in working with institutions applying for accreditation approval of their teacher education programs. Basically, the NSTA guidelines specify a 32 semester hour requirement in **each** teaching discipline and include 16 semester hours in other support sciences.

The science educators agree with NSTA that depth of preparation in each scientific discipline to be taught and a broad view of science required through support sciences is crucial to good science instruction. They recognize, however, that these guidelines may not realistically be applied to all science teachers in Iowa, particularly those in small schools. Nevertheless, the levels of preparation outlined by NSTA appear to them to be desirable goals for teachers striving to be certified at the master teacher level.

The educators are recommending to the Dept. of Public Instruction Director of Certification the following guidelines for endorsement of entry level teachers of science:

- a minimum of a college major in science (e.g., biology, chemistry, physics, physical science, all-science) that consists of at least 30 semester hours of science of which at least 24 hours must be in laboratory courses.
- endorsement to teach in any area of science (i.e., biology, chemistry, physics, earth science, physical science) be contingent on having at least 16 semester hours within that area.

These recommendations are consistent with those that are proposed in social studies, in which both breadth of preparation in social studies and areas of distribution are specified.

— C.W.B.

Book News

"The Comet Handbook", G. Stasiuk and D. Gruber Stasiuk Enterprises, PO Box 12484, Portland, OR 97212. (32 pp.) \$5.00

The return of Halley's Comet is already generating public interest, and writers and producers of Halley memorabilia are gearing up. Written material is basically divided into articles in popular journals, handbooks for viewing the comet, and more definitive works such as Calder's *The Comet is Coming*.

If one wants only to be an armchair astronomer, then a book like the latter would be appropriate. On the other hand if one wants to know something about this comet, the story of comets in general, and do some serious observing as well, then a small handbook is recommended. This little volume would serve admirably for that purpose. It covers the history of comets, the nature of comets, the history of Halley's Comet, and the orbits of comets. It then includes a section on comet observing and photography including horizon oriented charts for viewing Halley's Comet. Of particular interest is the information for the different phases of the viewing period. One section (Oct. '85) is titled "Telescope and Large Binocular Viewing," another (Nov. '85) "Binocular Viewing," a format that should be very useful. The quality of the reproduction of the illustrations is not sharp, but the information contained appears accurate. For the classroom teacher who may wish to include a unit on comets, for the person interested as layman, or for recommendation to junior high school age students and older, the book is first-rate.

— D.H.