

1977

## From the Editor's Desk

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### From the Editor's Desk

The lead article in this issue suggests that, in the near future, computer outlets may be available in many more schools in Iowa. The utilization of computers in science classrooms has been well documented (5) (2) (3). The different ways that computers can be used in science classrooms are limited only by the creative imagination of science teachers. Computers are even being used to make out examinations (1).

In earth science, for example, siltation is one of the major problems affecting Iowa's aquatic communities (6). Several mathematical expressions have been developed to describe the settling of particles suspended in liquids. One expression, Stokes' Law, applies to settling rates of silt-sized particles in fluids. The traditional way to study such phenomenon is to place various-sized particles into different containers of water, agitate and measure the settling time. Anyone who has performed such an experiment knows how long it takes for small particles to settle before settling time can be determined. It takes too long! By using computers the experiment can be completed and analyzed in a single period. The students leave, at the end of the period, with a graphic model of how particle size affects sedimentation rates and there is no mess to clean up.

Stokes' Law states that  $v=Cd^2$ , where  $v$  is the velocity of the settling particle,  $d$  is the diameter of the particle and  $C$  is a constant.  $C$  reflects such variables as particle density, fluid density and fluid viscosity. For water at a temperature of 20° C and for particles with a specific gravity of quartz, the value of  $C$  is  $3.57 \times 10^4$  (4).

To help students conceptualize the effects of particle size with respect to settling time, the following program (Fig. 1), written in BASIC computer language, can be used to derive the settling time in 100 cm of water.

```
10 PRINT "D="
20 INPUT D
30 S=100/(3.5*10 ↑ 4*D ↑ 2)
40 PRINT "S=" : S
50 GOTO 10
60 END
```

Fig. 1. Stokes' Law Computerized.

In this program, students randomly select a minimum of 20 different particle diameters within the range of 0.01 mm to 3.0 mm and insert them into the program. As values are printed, they are plotted on semi-log paper and discussed at the conclusion of the exercise. This is just one of many applications of computers in the classroom. ISTJ would like to know of others. Please submit your program with accompanying explanation to ISTJ, Biology Department, University of Northern Iowa, Cedar Falls, Iowa 50613.

## Literature Cited

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2. Hungerford, J and R. Carter. 1976. The computer in high school science instruction. *Iowa Science Teachers Journal* 13(2):9-10.
3. Smerud, S., G. Thomas and T. Keenan. 1976. A computer assisted environmental education resource program. *Iowa Science Teachers Journal* 13(3):2-7.
4. Spaulding, N E. 1976. A simple computer exercise in sedimentation. *The Science Teachers Bulletin* (New York) 51(2):38-39.
5. Steward, R. 1976. Computers in physics teaching. *The Science Teachers Bulletin* (New York) 51(2):23-34.
6. Water Quality Management Division. 1975. *Iowa Water Quality Report* Iowa Department of Environmental Quality.

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### New ISTJ Associate Editors

Three Associate Editors have been selected by the *Iowa Science Teachers Journal's* Advisory Board. Gary Downs, of Ames, has agreed to serve as Associate Editor in Elementary Science Education. Tom Scott, of Des Moines, has agreed to serve as Associate Editor in Junior High Science Education. Darrel Hoff, of Cedar Falls, has agreed to serve as Associate Editor in Earth Science Education. The *ISTJ* Advisory Board wishes to express its appreciation to the new Associate Editors for their professional contribution in improving the readership of the journal in their respective interest areas.

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### Energy Sources 77

On September 24, 1977, a series of solar energy and energy conservation workshops will be conducted at the Des Moines Area Community College in Ankeny, Iowa. These workshops will be conducted by Iowans currently engaged in energy programs and they are designed to bring practical information to non-specialists. For further information, write Energy Sources 77, 1342 30th Street, Des Moines, Iowa 50311.

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### New ISTJ Service

In order to provide *ISTJ* authors with wider readership, all articles published in the *Iowa Science Teachers Journal* will be abstracted in *Resources in Education* in the *ERIC* system.