



A. Ivan Johnson

New Directions of Committee D-18 on Soil and Rock

It has been said that the most profound changes take place by evolution rather than revolution. Certainly, I have not seen a revolution take place in ASTM Committee D-18 during the six years I was Chairman but I have seen a steady evolution of new directions for the Committee. The new directions run very deep and I believe the Committee is not likely to turn back from those new directions in view of the increasing emphasis on nontraditional applications of soil and rock.

The name of Committee D-18 used to be "Soil and Rock for Engineering Purposes" but the Committee decided in recent years to shorten that title to simply "Soil and Rock" to better reflect the needs of the times. From its formation in 1937 until its change in title and scope, D-18 had focused primarily on those properties of soil and rock required for design and quality control of engineering works such as highways and building foundations. A major impetus to broaden the Committee's work has been the growing use of the earth as a depository for hazardous wastes in landfills, retentions ponds, and deep disposal wells, the increased concern for the environment, the accelerated interest in subsurface energy development, and the greater demand for groundwater—all related in one way or another to soil and rock. For example, with the rapid development of environmental awareness and legislation over the last decade, groundwater contamination has emerged as a prime environmental issue. Since the chief pathway for such contamination is through the earth's soil and rock, D-18 finds itself increasingly looked to for standards to guide the proper care and use of what I like to call the "earth environment." We must regard this, along with the water and air, as one of the three basic elements of the environment.

Another emerging issue of the last decade, energy, is also spurring new standards development activities within D-18. Several years ago, in response to needs of the Department of Energy, industry, and others involved in energy development, D-18 formed Subcommittee D18.18 on Peats and Related Materials, to begin work on characterizing this energy-rich organic material. The group accepted jurisdiction over nine peat-related standards originally developed by agriculturally oriented ASTM Committee D-29 on Peats, Mosses, Humus, and Related Products, which disbanded in 1976. A prime interest of Subcommittee D18.18 is to draft specifications and standards to improve communication between producers and users of these organic materials. For example, there is a need for a way to compare the calorific content per unit mass of this nontraditional fuel. From the agricultural soils standpoint, standards are needed for verifying soil composition and ensuring that organic additives of the correct properties can be matched to their intended purpose.

On a related front, the spiraling cost of energy has made geo-

thermal sources and oil shale attractive as alternative energy sources. Geothermal wells and oil shale for retorting are developed within the "earth environment" and produce considerable quantities of brine, or retorted shale that must be disposed of properly. In addition, the actual drilling of geothermal wells under very high temperatures poses a number of special problems that must be resolved by Subcommittee D18.02 on Sampling and Related Field Testing. The great demand for groundwater has increased the demand for standards related to drilling of water wells, groundwater monitoring, well testing, groundwater sampling, and properties of aquifers, many of which are the responsibility of Subcommittee D18.04 on Hydrologic Properties, as well as D18.02.

Areas of mutual concern also have developed between other ASTM committees and Committee D-18. For example, Subcommittee D13.61 on Geotechnical Fabrics and D18.19 on Geotextiles and Their Applications share an interest in geotextiles—those engineering fabrics that are installed in contact with soil or rock under highways, railroad beds, and rip-rap (the latter is the responsibility of new Subcommittee D18.17 on Rock for Erosion Control). Subcommittees D-22.11 on Meteorological Measurements and Committee D-19 on Water are concerned with the sampling and analysis, respectively, of acid rain. On the other hand, the rain penetrates the earth environment and these two committees thus share a mutual interest with D-18 because any change in water quality plays an important role in determining the properties of the soil and rock/fluid system. Committees E-10 on Nuclear Technology, C-26 on Nuclear Fuel Cycle, and D-34 on Waste Disposal should have much to gain from the geotechnical expertise prevalent in D-18 subcommittees such as D18.12 on Rock Mechanics, D18.14 on Geotechnics of Waste Management, and D18.20 on Impermeable Barriers. These D-18 subcommittees have been working, respectively, on standards relating to the safe disposal of high-level radioactive waste in deep rock repositories; the disposal of hazardous and other wastes in landfills, ponds, and lagoons within the "earth environment;" and containment of water and other fluids in canals, ponds, and by means of slurry walls and linings. In looking at corrosion problems associated with underground pipelines, D-18 can supply the expertise on physiochemical properties of soil and rock (Subcommittee D18.06 on Physiochemical Properties) needed by Committee G-1 on Corrosion.

I have given only a few examples of the broad interests and capabilities of Committee D-18. To handle the increased work load of the Committee we have doubled the membership, but we are still in need of a certain expertise or class of representative. Particularly needed are soil physicists, soil chemists, geologists, and geophysicists, in addition to the everpresent need for specialists in soil and rock mechanics. The Committee benefited from a very high level of federal agency participation in recent efforts to revise some ASTM standards, but there needs to be even stronger involvement by federal and state government agencies, especially regulatory agencies. More consultants and industry representatives also are needed to insure that the needs of the practitioner are met.

Although we can use additional specialists, I believe that Committee D-18 is ready for the broad, complicated, interdisciplinary challenges for the "earth environment" during the next decade because of the dedication and expertise of our members and committee officers. They have been a great group with which to work.

Meetings of Committee D-18 usually are held in June and January. Everyone interested in the Committee is invited to contact Kenneth C. Pearson, ASTM Standards Development Division, 1916 Race St., Philadelphia, PA 19103 (215/299-5520).

A. Ivan Johnson, Past Chairman of Committee D18