

might be expected to result from application of these techniques and from different seams and associated formations.

Work in some of these research areas is already progressing and descriptions may be found in *Résumés of Mine Drainage Research Programs Sponsored by the Coal Research Board of the Department of Mines and Mineral Industries*. (Available in committee files.)

Further, there is an urgent need as research continues on some of the items contained therein for demonstration projects to determine the practicality of the methods that have been developed.

Also of interest is an excellent report on the *Status of Mine Drainage Technology* by E. A. Zawadzki, as presented by James F. Boyer of the Bituminous Coal Research, Inc., Monroeville, Pennsylvania, before the U.S. Committee on Public Works, Subcommittee on Air and Water Pollution, July 13, 1967. (Available in committee files.)

The fourth need—the need for effective direction and coordination of effort—is a real knotty one.

Here, we have quite a number of suggestions, and we feel constrained to point out that the role played by the Federal Government in these areas has been inadequate, too unwieldy, too slow, and their efforts have not only been too diversified, but have duplicated those already covered by the States.

The Federal agencies which have been involved thus far have felt that they must start from the beginning and, while this is probably a good way to train personnel, the past work of the States in the same areas has largely been ignored.

An excellent example of this was a number of demonstration projects initiated by the FWPCA which were never completed.

We suggest that, if it is necessary for the Federal Government to be actively involved in the abatement of mine drainage and in the reclamation of surface-mined areas in the individual States, then one Federal agency with manpower and facilities to collect, store, catalog, map, and abate mine drainage should be established at once.

Making one agency accountable for the program will prevent duplication of work and channel efforts of various cooperating groups in the proper direction. This would certainly be more economical and effective than the present duplication of effort.

Actually, the major effort in the abatement of mine drainage and reclamation—including research and pilot projects—has, to date, been made by the individual States.

The Federal Government programs have been hampered by poor coordination and duplication, particularly in studies and in misdirected efforts.

In Pennsylvania, the State agencies and the mining industry have contributed manpower, information, and pioneered research with little help from the Federal Government. Some of the programs have in reality been funded twice by the State through Federal funds and by State funds.

In fact, it is our feeling that large Federal administrative units are not needed to carry out these programs in the individual States.

Since the expertise already exists within the States—in the State agencies, in the State Universities, and the mining industry—we feel that we are far enough ahead so that, if an influx of Federal funds is directed to the State agencies, universities, and the private industrial