east) is the Fayette fluvial-delta system consisting of dip-oriented, lobate wedges of sand, mud, and lignite. The vertical sequence in updip subsurface and outcrop, with gradation upward from marine mud through several delta facies and into fluvial sand and mud, reflects net regression and progradation of the system. Southwestward, transport of sand and mud from the delta system, principally by longshore drift, resulted in the South Texas strandplain-barrier bar system, made up of strike-trending sand bodies interbedded with marine and lagoonal mud. Landward of the strandplain–barrier-bar system and extending into outcrop is a complementary lagoonal–coastal-plain system consisting of mud and minor, dip-oriented sand units. Gulfward of the strike-trending strandplain system is the South Texas shelf system, formed by marine mud derived largely from the delta system on the northeast. Beneath the South Texas strandplain-barrier bar and Fayette delta systems and extending eastward into Louisiana and Mississippi is the Caddell-Yazoo shelf system consisting of marine, fossiliferous mud and minor glauconitic marl. Delineation of depositional systems, and specifically component facies of the various systems, facilitates definition of significant mineral trends (oil, gas, lignite, and uranium) that show the relation between current and potential areas of production.

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WELL-DATA FILES AND COMPUTER—EXPLORATION TOOLS FOR THE SEVENTIES

Since the development of computer-processable well-data files began in 1961, more than 600,000 wells have been included in systems covering most of the United States and Canada. These systems contain information on ownership, location, well classification and status, drilling and completion activities, tests, depths to formation tops, core descriptions, shows, and other data. Data are obtained from the most reliable and complete source for each area and are upgraded by computer editing and the feedback of missing data and corrections from file users.

Well-data files are used at various stages of the exploration process for basin evaluation, for selection of prospective stratigraphic intervals and areas for further study delineating prospects for acreage acquisition or drilling, and for building peripheral files containing proprietary, technical, and economic data. A study of the Muddy Sandstone in the Powder River basin illustrates an exploration application of computer processing a large well-data file. Prior to the discovery of Bell Creek, data from the file revealed areas in Wyoming and southeasternmost Montana with abundant hydrocarbon shows in the Muddy Sandstone. North and South Dakota and the rest of Montana had no oil shows in the Muddy Sandstone. In the area of abundant shows geologic maps based on formation tops obtained from the file indicated trends on which subsequent drilling has discovered more than 525 million bbl of reserves. Two types of depositional areas favorable for hydrocarbon occurrence were indicated. One was related to deposition around a pre-Muddy positive feature defined by Skull Creek structure and isopach residual maps of the Muddy Sandstone. The other was a channel system defined on an isopach residual map. Approximately 750 wells have been drilled in the "no show" area without discovering commercial oil.

At the time of discovery of Recluse and Bell Creek, information was available within the Rocky Mountain Well History Control System to suggest areas favorable for similar types of production from the Muddy. With addition of new well control and proprietary information, the well-data file can aid in the planning of development drilling, analysis of completion practices, and reservoir evaluation. Large well-data files and proper application of the computer to these data will become increasingly important in the discovery of oil and gas during the 70's.

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CORRELATION OF SILURIAN STRATA BETWEEN GEORGIA, ALABAMA, AND FLORIDA BASED ON CHITINOZOAN BIOSTRATIGRAPHY

Silurian chitinozoans have been described previously from 4 wells in north-central Florida. These wells also have been correlated previously with each other as well as with known Silurian sections. The youngest assemblage is of Ludlovian age; the oldest is of late Llandoverian age.

Outcrop samples were collected from the Silurian Red Mountain Formation in Alabama and Georgia. This formation has been dated as Llandoverian on the basis of megafossil evidence. Four Red Mountain Formation sections are divided into biostratigraphic zones on the basis of chitinozoan assemblages.

Attempts at correlating the well and outcrop samples on the basis of frequency of chitinozoan taxa proved unsuccessful, because only a few taxa are abundant throughout the sections. Instead, correlations are made on the first or last occurrence of certain taxa. A comparison of the assemblages in the oldest (Ludlovian) Florida well section and the youngest (late Llandoverian) Red Mountain Formation section indicates that they have only 2 taxa in common. A comparison between the other parts of the Florida and Alabama-Georgia sections was not feasible because of the great age differences.

The general aspect of the Florida assemblages is quite different from those in Georgia and Alabama. It is concluded that the sections in Georgia and Alabama are of ages different from those in Florida. The rocks are not different faunal facies of isochronous strata because chitinozoans are planktonic and are therefore not lithofacies dependent.

One problem encountered in this study was that 3 wells did not penetrate very deeply into Silurian strata. Three of the Florida wells only penetrated the Upper Silurian, and only one went as deep as the Lower Silurian. Future work in correlating the Silurian rocks from these 3 states must depend on new wells being drilled to greater depths.

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EXPLORATION GEOLOGIST IN THE SEVENTIES

The 70's promise to be a period of turmoil and change for the petroleum industry, not only in the United States, but throughout the world. These conditions will have a significant effect on explorationists.

Ecology and environment are rapidly becoming common words in our vocabulary and, as scientists, we must make our technology compatible with the environment.

The explorationist (the geologist and the geophysicist) will have to search for and locate large reserves in this country, if we are to meet the anticipated increase in domestic demand for petroleum products in