the deep Anadarko basin. Production to date has been excellent. Initial potentials are more than 1,000 BOPD. Liberal allowables of up to 580 BOPD and payouts of 4–6 months for the better wells account for the rash of drilling activity.

At the end of May 1971, 74 producing wells had been completed on 160-acre spacing in a producing trend extending over 15 mi from just west of Chickasha in T6N, R8W, to Dutton townsite in T9N, R9W. There are presently 10 wells drilling to the Marchand sandstone, 5 announced locations, and 18 wells that have run production casing and are in some stage of completion. Depths range from 10,100 to 11,000 ft and drilling costs are from $100,000 to $120,000 to casing point and $180,000 to $200,000 for a completed producer.

The Marchand is a fine-grained, well-sorted sandstone and is generally highly laminated with shale. Silt and clays are found in the matrix. Regional correlations and examinations of samples, cores, and thin sections lead the writer to believe that the sandstone is of deltaic origin. The deltaic deposition apparently was complicated by channeling and offshore bar development. Regional structure at the Missourian level is relatively uncomplicated, dip being monoclinal at approximately 1°/mi toward the basin axis and interrupted only by slight nosing. The trap appears to be purely stratigraphic.

Marchand sandstone pay thicknesses range up to 125 ft. The reservoir is undersaturated and oil wet with solution gas drive. Gas/oil ratios are approximately 700 to 1 and original bottomhole pressures between 4,600 and 6,300 psi. Primary recoveries should range between 12 and 16% of the oil in place and reserves for the better wells with the thickest pay sections should be more than 750,000 bbl of oil.

The excellent production from the Marchand sandstone touched off an extensive leasing campaign in southwestern Grady and southeastern Caddo Counties, Oklahoma. The Marchand is only one of several sandstones developed in the Missourian section and chances are good that wildcat drilling will uncover additional stratigraphic production from the Missourian section in this part of the Anadarko basin.

HARRELL, B. E., Arkansas Louisiana Gas Co., Shreveport, La.

PROBLEMS OF NATURAL GAS SUPPLY

Since 1968 the United States has produced more gas than it discovered. This trend will continue as more heavy industry turns to natural gas and away from other fossil fuels in efforts to stem air pollution. New and proved reserves in Alaska are far from the marketing stage. The decline in drilling, to a 28-year low in April 1970, has been the result of 17 years of unnatural price ceilings on natural gas and, more recently, of the reduction in 1969 in the depletion allowance. However, current pricing trends by the Federal Power Commission, and incentives by pipeline companies and funds, now make deep wildcatting in the Anadarko basin and elsewhere very attractive.

HEFNER, ROBERT A., III, Glover Hefner Kennedy Oil Co., Oklahoma City, Okla.

NATURAL GAS IN ANADARKO BASIN

Geologists tend to think of natural gas in geologic terms. However, Mid-Continent geologists also should think of gas in the Mid-Continent, and particularly in the deep Anadarko basin, in terms of the economics of the total system of production and delivery to market from the Mid-Continent area, and the overall economics of the energy industry in the United States.

Good exploration geologists have understood for years the importance of the interface between their discipline and others, but there are now more disciplines to which they must relate as they think of gas exploration in the long term. Geologists have included in their thought-processes operating constraints of the production phase of the business, but with the search for greater reserves, and particularly ultra-deep reserves, production technology has changed so substantially that a new and more comprehensive view of this developing technology is required. In addition, geologists must become economists in a sense, because the development of commercial reserves is closely related not only to the cost of production, transportation, and distribution, but also to the costs of all alternate sources of energy when delivered to the consumer.

LOUDEN, L. R., Dresser Magcobar, Houston, Tex., and BILLY W. AUD, Dresser Olympic, Houston, Tex.

INTERDISCIPLINARY APPROACH TO SUCCESSFUL DRILLING

A multidiscipline approach to well planning has proved successful in determining "drillability" lithology and pressure profile in unknown or relatively undrilled basins. The marriage of seismic velocity information to classic historical geology, facilitated by translation of the combined information into drilling parameters, guides the planning and drilling of technical wildcats. Work done in the Santa Barbara Channel and a case history of the GHK #1-22 Farrar are examples of the multidiscipline approach.

MASON, JOHN W., Amarex, Inc., Oklahoma City, Okla.

HAMON LOCKE MULTIPAY FIELD

The Hamon Locke field on the Wheeler-Roberts county line in the Texas Panhandle was discovered late in 1970 by the Jake L. Hamon No. 1 Locke. To date, 4 wells have been completed and 1 is currently staked. Producing formations are the Ellenburger, Simpson, Hunton, and Brown dolomite with proved productive granite wash and Mississippian zones behind pipe in 3 of the wells. The field is structurally controlled and was drilled on seismic information refined by subsurface data from 2 nearby dry holes which were also drilled on seismic information, emphasizing again the need for continuing review and interdisciplinary coordination. The hydrocarbons produced are significantly different from other nearby lower Paleozoic fields, and some conjectures are presented to stimulate further work to account for these differences.

MOORE, CARL A., Univ. of Oklahoma, Norman, Okla., and BIJAN ESFANDIARI, Univ. of Tehran, Tehran, Iran

GEOCHEMISTRY AND GEOLOGY OF HELIUM

Helium is formed as a product of radioactive decay of trace elements in several rocks and minerals. It is being produced continually in the earth's crust by the disintegration of uranium, thorium, and other elements which are alpha-particle emitters.