The exposed portion of the Magdalena formation consists primarily of thin-bedded, light gray to black limestone, and for convenience it is divided into the following three units: the La Tuna at the base, the Berino, and the Bishop's Cap at the top.

Comparatively few fossils have been reported from the near-by localities; hence it is difficult to use them to correlate the Magdalena of the Franklin Mountains with formations in these areas. A few closely allied genera and species of gastropods and brachiopods are reported from the Taos region of northern New Mexico and from the McCoy region and the Mosquito Range of Colorado. However, the most striking similarity is to a gastropod fauna described from the St. Louis outlier of Missouri and the equivalent St. David's limestone of Illinois.

The Permian is represented by about 650 feet of exposed sediments known as the Wolfcamp. These sediments occur as outliers some distance west of the Franklin Range and are separated from the exposed Magdalena sediments by alluvial deposits; hence the contact between the Magdalena and the Wolfcamp has not been seen.

8. C. E. NEEDHAM, associate professor of geology, School of Mines, Socorro, New Mexico: Correlation of the Pennsylvanian Rocks of New Mexico.

A typical section of Pennsylvanian rocks in central New Mexico is 1,500–1,800 feet thick. The lowest beds lie below the zone of *Triticites* and *Wedekindellina* and contain *Chaetetes milleporaceous*, *Spirifer rockymontanus*, *Spirifer occidentalis*, *Cleiothyridina orbicularis*, and *Mesolobus mesolobus*. These beds are considered to be younger than Bend, Morrow, or lower Pottsville, and are believed to correlate with the lower Cherokee, lower Atoka, upper Dornick Hills, lower Deese, lower Millsap Lake, lower Hartville, upper Pottsville, and lower Allegheny.

The zone above contains *Fusulina eurylcines*, *Wedekindellina euthysepta*, *Wedekindellina excentrica*, *Chaetetes milleporaceous*, *Cleiothyridina orbicularis*, and *Mesolobus mesolobus*. These beds are correlated with the upper Cherokee, McCoy, upper Hermosa, middle Hartville, upper Millsap Lake, middle Haymond, upper Atoka, middle Deese, Boggy, Wetumka, Carbondale, and upper Allegheny. The equivalent of the Marmaton and Wewoka has not been recognized but is believed to be present.

The succeeding zone is the equivalent of the Kansas City and Lansing, upper Hartville, middle Canyon, middle Gaptank, middle Hoxbar, and lower Conemaugh. It is characterized by *Triticites nebraskensis*, *Echinoconchus semipunctatus*, and *Neospirifer latus*.

Next above is a zone containing numerous advanced species of *Triticites*, *Enteletes hemiplicatus*, *Marginifera hystricula*, and *Chonetes transversalis*. This zone is the equivalent of the lower Virgil, lower Cisco, upper Gaptank, and Vamoosa. Finally, the highest Pennsylvanian beds in New Mexico contain *Triticites ventricosus* and are probably the equivalent of at least a part of the Wabaunsee and the upper part of the lower Cisco.

9. JOHN W. SKINNER, geologist, Humble Oil and Refining Company, Midland: The Upper Paleozoic Section of the Chinati Mountains, Presidio County, Texas.

Previous work in the Chinati Mountains is briefly reviewed and the various exposures of Paleozoic sediments are described. The stratigraphy is dis-

cussed and evidence is presented demonstrating the presence of a Permian section nearly as complete as that of the Glass Mountains, as well as a fairly complete Pennsylvanian sequence.

10. LOUIS V. OLSON, assistant director, Agricultural Research Department, American Smelting and Refining Company, El Paso: Aerial Photography for Geological Exploration.

The use of aerial photographs has gradually increased until at the present time no important surface geological work or any other surface exploration work, such as for power lines, canals, or pipe lines, is undertaken without the preliminary of an aerial survey. The sensitivity of the modern photographic materials is such that by the proper use of light filters slight color changes may be detected denoting changes of bedding planes which could not be detected by the eye. Stereoscopes have been developed that make it possible to detect even minor changes in elevation. Sketching of contours on the photograph tends to eliminate laborious ground survey work. Of course, the stereoscope also indicates the relative hardness of adjacent terrain, which is very important in tracing rock formation.

11. CARY P. BUTCHER, geologist, Tide Water Associated Oil Company, Midland: The Guadalupe Mountains as They Look to the Aerial Geologist.

Stratigraphy in the Guadalupe Mountains is definitely related to contemporaneous structural movements. These relationships become obvious to the aerial observer. They become a part of his permanent record when they are photographed. Initial ground reconnaissance is advisable, and subsurface data should be given careful consideration. Such procedure has been followed in the Guadalupe area. Aerial observation is of great value even prior to surface or subsurface study. Thus time is saved, especially as the observer gains in experience. Hence these progressive aerial obliques of the Guadalupe Mountains are presented in the hope that they will be of value in better understanding subsequent papers and field trips. They culminate work begun in 1928. Views are east-northeast, and the progression is in a northwesterly direction. A simple cross section is added in further explanation.

12. RONALD K. DEFORD, geologist, Argo Oil Corporation, Midland, GEO. D. RIGGS, consulting geologist, and NEIL H. WILLS, consulting geologist, Carlsbad, New Mexico: Surface and Subsurface Formations, Eddy County, New Mexico.

This is a preliminary report on incomplete surface and subsurface studies in Eddy County and adjacent areas. Results so far are as follows.

The Yates sand has been traced from subsurface into the surface outcrop, and the top of the Yates mapped from Carlsbad to McKittrick Canyon.

The subdivision of the Whitehorse-Capitan is simplified, making it more suitable for daily use by subsurface (and also field) geologists. From top downward it is subdivided into Carlsbad, Yates, Seven Rivers, Queen. This involves redefinition of the Carlsbad.

The gradation of Whitehorse into Capitan disposes of the untenable theory that the Whitehorse is Triassic. Yates sand passes beneath beds containing Permian (Guadalupian) fossils.

Even the youngest Carlsbad grades laterally into massive Capitan limestone, and all the Capitan limestone grades into the upper 800 feet of the