The clay mineral assemblage at the playa surface is dominated by illite with less than 5 per cent expansible phases present. Illite also is the predominant mineral in the source area; however, significant amounts of montmorillonite, chlorite, and kaolinite are being generated in the drainage basin. Discrepancies between the clay minerals of the lake bed and those of its source area are best explained by selective removal of finer colloidal material at the playa surface. The coarse sediment fraction contains detrital quartz, feldspar, heavy minerals, authigenic calcite, and ostracod valves. Saline minerals occur only as crusts at the playa surface.

Authigenic analcime is an ubiquitous constituent of the —2-micron fraction in amounts of the order of 10 per cent by weight. The absence of tuffaceous sediments in the core precludes alteration of volcanic glass to form analcime. Evidence is presented which suggests that analcime is a reaction product of kaolinite in the diagenetic sedimentary environment.

RODOLFO, KELVIN S., Department of Geology, University of Illinois at Chicago Circle, Chicago, Ill.

SEDIMENTATION IN ANDAMAN BASIN, NORTHEASTERN INDIAN OCEAN

The northeastern corner of the Indian Ocean is contained in the Andaman basin which has an area of 900,000 square kilometers. The northern and eastern third of the Andaman basin is composed of the shallow Irrawaddy delta shelf and Malay shelf, respectively 200 and 170 kilometers broad from the coasts to the 200-meter deep-shelf break. Along this terrace the bottom drops to the topographically complex basin floor with a maximum depth of 4,400 meters east of the Andaman-Nicobar Ridge.

Principal sediment source for the basin is the load of the Irrawaddy River, estimated during the last century at 265,000,000 metric tons per year, a figure which may be in error by a large amount. The subaerial delta is accumulating very little of the sediment, which reaches the sea and is displaced eastward by monsoon-driven currents. A 12,000-square-kilometer area southeast of the subaerial delta is the main depositional site. Marked shoaling of this area during the past century is too great to be explained by sediment accumulation alone, and it is suggested that localized tectonism is distorting the delta shelf. Deposition also is localized in the disturbed area, as sedimentation strives to re-establish and maintain a stable delta-shelf gradient of less than 0°01′.

A radiocarbon date from a basin core and foraminiferal data indicate a deep-basin depositional rate of 15 centimeters per 1,000 years. Sediment carbonate contents provide a rough comparison of relative depositional rates for the basin floor and the delta, indicating that sediment accumulates on the delta shelf at least 10 times faster than in the deep basin, or at a rate of from 100 to 200 centimeters per 1,000 years. Approximately 90 per cent of the Irrawaddy's load is deposited on the delta and only 10 per cent reaches depositional sites beyond the delta.

ROSS, CHARLES A., Department of Geology, Western Washington State College, Bellingham, Wash.

CONCEPTS IN LATE PALEOZOIC CORRELATIONS

Correlation of late Paleozoic strata presents two contrasting sets of concepts, one of intra-regional correlation and the other of inter-regional correlations. Correlation within a region, exemplified by a basin, segment of a geosyncline, or an epicontinental shelf, follows most of the classical procedures developed during the last 180 years. Where abundant well-log data or surface exposures permit the tracing of individual beds, development of three-dimensional facies analysis, key beds, and recognition of individual cycles within cyclical deposits provide accurate and detailed information for lithologic correlation. Where lithologic data are sparse, correlation based on fossil occurrence and abundance furnishes an additional type of correlation. Attempts to quantify fossil correlation include (1) presentation of the percentage of forms that two different localities have in common and (2) an analysis of the population in terms of the number of individuals. Individual guide fossils or sets of guide fossils with overlapping stratigraphic ranges also are widely used. Many of the most widely used guide fossils are pelagic, *e.g.*, the ammonoids. However, some benthonic fossils also are excellent guide fossils, particularly along depositional strikes.

Inter-regional correlations in the late Paleozoic, in contrast, are challenging in other aspects, because the tectonic and fossil history in one region may have virtually no similarity with nearby regions. Nevertheless, fossils still are the most reliable criteria for inter-regional correlation in late Paleozoic strata although the fossil yardstick as a time-stratigraphic scale commonly seems considerably less precise. One problem of particular concern is the development of faunal provinces and subprovinces in what appear to be isolated and semi-isolated regions segregated by late Paleozoic orogenic activity. Threshold levels of evolutionary adaptation and changes in physical environments seem to have enabled sporadic and irregular dispersal of different parts of these semi-isolated biotas, so that first appearances of one group in an adjacent region may have little relation to the first appearance of other groups.

RUDD, ERIC A., University of Adelaide, Adelaide, South Australia

EXPLORATION IN AUSTRALIA

(Abstract not submitted)

SAVAGE, DONALD E., and GARNISS H. CURTIS, Museum and Department of Paleontology and Department of Geology and Geophysics, University of California, Berkeley, Calif.

VILLAFRANCHIAN AGE AND ITS RADIOMETRIC DATING, II

The Villafranchian, though identified by non-marine phenomena, was one of the most precisely typified of the commonly used European Cenozoic Stages-Ages. Pareto (1865) gave exact geographic location and characteristic rocks of his stratotype for Villafranchian and listed the fossils that were known (three proboscidean species).

Villafranchian has been applied throughout Eurasia and Africa on the basis of a characteristic array of species of mammals. These species were obtained first from sites in Italy and France that were believed to be the same age as Pareto's Villafranchian. Validity and utility of the Villafranchian, as recognized through most of the Eastern Hemisphere, are not vitiated because some of its characterizing mammalian assemblages are younger than the type or because its lower boundary may not coincide with the currently accepted lower boundary of the Quaternary.

Large mammals now known from the stratotype, together with small mammals, mollusks, and plants