calations within the evaporites that intermittent flooding of a desiccated basin has occurred.

A further indicator of a shallow water environment is the distribution pattern of the evaporites. Typically, playa deposition constitutes a "bull's eye" zonation of concentric zones of salts, with the inner zone the most soluble, that is halite in this series. This seems to be the case, for halite coincides with the areas of deepest water in the western basin, whereas it was not found in the east. A restricted basinal type of deposition would require a "tear drop" pattern of deposition, where less soluble salts occur near the opening and soluble salts at the far end. With the limited coverage attained by JOIDES sites, however, it is difficult to speak authoritatively on this matter.

The greatest disagreement emerges during discussion of the depth of the basin itself, the salient problem being whether the water level altered intermittently or whether the bottom of the basin moved up and down catastrophically to produce the great thicknesses of evaporites attained in the Mediterranean. Hsü *et al.* (*DSDP Initial Reports*, II, 43, 1203 ; 1973 ; and page 240 of this issue of *Nature*) favour the existence of a deep depositional basin largely on the strength of palaeontological evidence. The sediments immediately overlying the evaporites contain deep-water foraminifera of Pliocene age, whose appearance would be difficult to envisage in the event of an inundation of a shallow basin of Upper Miocene age. Also the sediments of Middle Miocene age cored from the Hellenic Trench are of deep water pelagics so that it seems probable that the basin had a generally deep base level. Geomorphological evidence has been recognized by Hsü *et al.* from adjacent land areas, where channels, cut by streams rejuvenated during regression of the sea, have been infilled by alluvial and terrestrial clastics. Steeply graded canyons are apparent at the continental margins, and these are probably drowned river valleys of Upper Miocene age. Nesteroff (*DSDP Initial Reports*, II, 21, 673 ; 1973), however, describes these canyons as a rejuvenated Middle Miocene system which was recut during subaerial erosion in a shallow basin. This is one example of a series of data which may be adapted to fit either hypothesis.

Finally, Nesteroff uses the evidence of local vertical tectonic activity of post-Miocene age in the Mediterranean area to argue for a shallow basin formation. His model requires the existence in the Serravallian of several shallow basins, of restricted circulation and connexion, which became completely cut off from the Atlantic during the Messinian. Desiccation followed, and was relieved only by periodic influxes from the Straits of Gibraltar. These permitted the accumulation of great thicknesses of evaporites in a central trough and thinner peripheral deposits on the slopes of the basins. Then, during the Pliocene transgression, deep pelagic oozes were deposited and vertical movements led to the subsidence of the basins and uplift of the surrounding margins.

On the other hand, there is Hsü's picture of a deep hole, intermittently refilled during the Messinian by overflow from the Straits of Gibraltar, the brine content in the basins being successively replenished. The progress is recorded by the interbedded marine marls of the Upper Miocene evaporite formation of Sicily. The facts are inadequate to prove either hypothesis fully ; neither will be credible until further drilling reveals the detailed sequence of pre-evaporite sediments.

From a Correspondent

Unique Sequences in Eukaryotic mRNA

In next Wednesday's *Nature New Biology* (March 28) Dina, Crippa and Beccari describe experiments designed to determine whether or not there are, in a population of mRNAs from developing *Xenopus* embryos, sequences transcribed from reiterated DNA.

Labelled polysomal mRNA extracted from dissociated *Xenopus* embryos was found to have a high specific activity and was shown to be free from contamination by labelled ribosomal sequences. These features, combined with the use of stringent hybridization conditions to prevent degradation of RNA during the annealing reaction, provided the basic requirements for successful RNA hybridization with DNA in excess.

When *Xenopus* mRNA was annealed to DNA, only 5 per cent of the input RNA hybridized before a C_0t of 10^{-1}. At C_0t 100, 13 per cent had hybridized and the rest of the hybridization followed kinetics similar to those of unique sequences reaching a final value of 61 per cent between C_0t 5×10^3 and 2×10^4. In ideal conditions for DNA excess hybridization, however, up to 90 per cent of input RNA should be hybridized.

Using a filter trapping method mRNA reassociated with DNA starting with a very low C_0t 10^{-2} and at C_0t 100 the reaction was complete when 80 per cent of the input RNA was retained by filters. The hybridization curve revealed two main components renaturing at different rates with C_0t 1/2 of 5×10^{-2} and C_0t 1/2 20 to 30. Only a small percentage of the RNA bound to filters, however, was RNase resistant.

The melting profiles of DNA/mRNA hybrids obtained at low (100) and high (3,000) C_0t values are practically identical ; they are very sharp and have T_ms very close to the T_m of native *Xenopus* DNA. These facts suggest that the hybrids which are formed are very specific, and, because they are so similar to the melting curve of DNA, there must be some mRNA complementary to rapidly renaturing reiterated sequences.

Dina *et al.* suggest that these results are best explained if one supposes that each mRNA molecule consists of a part which hybridizes to repeated sequences and a second part which is complementary to a unique sequence. Thus, in the filter trapping experiment, the repetitive part of the mRNA molecule hybridizes rapidly to reiterated DNA; the rest of the molecule is also retained by the filter and complete (80 per cent) retention is obtained at a low C_0t 100. They also suggest that the long incubation times required for high C_0t values lead to thermal breakage of the partially hybridized mRNA. The RNA fragments broken off would contain unique sequences which would then hybridize more slowly, giving rise to the 61 per cent hybrid obtained at the end of the annealing reaction.

If each mRNA molecule consists of a fast and a slow annealing part then partial degradation of the mRNA molecules should shift the kinetics of reannealing. When alkaline digested mRNA was hybridized to DNA the kinetics were similar to the reaction with intact mRNA up to a C_0t 50. But in this case hybrid formation reached a final value of 90 per cent of input RNA at a C_0t of 2×10^4.

These results indicate that each mRNA molecule contains a main part, which is transcribed from unique DNA, and a covalently linked small part transcribed from a family of homogeneously repeated sequences. If repeated sequences are bound to many different unique sequences they should be found dispersed throughout the genome. Indeed when DNA was fractionated on $CsCl_2$ the mRNAs hybridized to main band DNA and not to satellite DNA.