



Fig. 2c. The maturation of DNA coding for immunoglobulin [15].

These environmentally conditioned selective gene amplifications explain very well the physiological effect of over-recovery, which indeed, is specially pronounced in very young individuals. We propose it as a basic way of acquisition of information by the organisms about their environment. These genetic acquisitions explain in molecular terms the Piagetian theory of a "majorant reequilibration" during the cognitive development of man and other animals.

According to our interpretation, the new genetic information is originated by the expression of genes during specific periods of ontogeny. For the expression of genes is at the base of all activities of living organisms, we have a strong argument in favor of the old Lamarckian theory that the behaviour of living organisms plays an essential role in the evolutionary process. At the same time, the phenomenon of the over-recovery from induced destructions makes doubtful the very existence of the evolutionary process imagined by Darwin: the essence of the Natural Selection is the destruction by environment. . . .

#### CONDITIONING OF NEW BEHAVIOURS AND STRUCTURES

The diversification of life forms, and the appearance of completely new ones may be originated as follows: A simultaneous amplification of several genetic segments increases the probability of their meeting and of their ligase mediated association (Fig. 2b). If these segments bear no signs of punctuation, an external signal provoking the transcription of a first recombined segment should automatically cause the transcription of all the following ones. As it has been demonstrated in detail in articles [4,5], this extremely simple model of "genetic engineering" at the cellular scale converges with a phenomenon of a "conditioned reflex", well known to sportsmen, psychologists and ethologists. It requires of these reflexes to be constructed at the level of individual cells, and recent experiments[13] confirm this assumption. Our simplified model of conditioned reflexes is built solely on predictions given by the physics and chemistry of gene replication, expression and repair. In reality, it might be quite complex, especially in cells specialized in "intelligent associations" (neurones, lymphocytes). One thing is