

Belt 1- Immediate draft

Truly remarkable progress has been made in the field of molecular genetics during the last ten ~~km~~ or 15 years. The field should continue to advance rapidly during the foreseeable future.

Alternative paragraph

The field of molecular genetics is advancing at an incredibly rapid rate and it seems probable that the field will continue to advance perhaps even more rapidly during the foreseeable future. The new knowledge has had relatively little effect upon man thus far.

The ~~field~~ field of molecular genetics has advanced with remarkable ^{during} rapidity and should continue to do so ~~km~~ the foreseeable future. The immediate effect of the new knowledge is to open up new areas for exploration so I think it probable that the field will continue to advance quite rapidly in the foreseeable future.

During the 1930s physicists realized that the release of nuclear energy was theoretically certain, but they doubted whether it would be of practical interest. Because of this uncertainty, physicists did ~~relatively~~ little to inform society of what might come. When the power became reality, society was unprepared intellectually and institutionally to deal with it. The scientist therefore must

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The field of molecular genetics has advanced with remarkable rapidity, due to the efforts of investigators in virtually every field of science. One may speculate about probable future developments and about how the new knowledge will affect the eternal questions of who we are and where we are going. The phenomenon of transformation has been studied in considerable detail and it is clear that cells can be transformed genetically by DNA prepared from natural sources. The new information can be inherited by the descendants of the recipient cells. We know that the machinery of the cell will accept and follow instructions that are written in the appropriate molecular language. The language is now deciphered, so in theory, at least, one can compose new genetic messages of known information content. Simple genetic messages can be synthesized chemically, largely due to the pioneering studies of Gobind Khorana and his colleagues.

It seems probable that mechanisms of storing and recalling genetic information evolved a billion or more years ago, perhaps during the transition from a cellular to the cellular form of life. Later, as single cells evolved into more complex multicellular organisms, the nervous system

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~~and neurologic must have~~ evolved. The genes obviously contains the information that ultimately gives rise to the ~~brain~~. At this time a new biological cycle is evolving, for it should be possible within the near future to synthesize genetic messages and then to use them to program cells. We know that the gene ultimately contains the information that is responsible for the formation of brain. It seems likely that man eventually will be able to instruct his own cells, and ultimately, influence his own biological evolution. One can predict that a new area of research will emerge during the next 25 years, that of molecular evolution, in which the effects of synthetic genes upon the economy of the cell will be explored in a systematic fashion.

It seems likely that man eventually will be able to instruct his own cells, and ultimately, influence his own biological evolution. We are at this point in time the final stages of a new biological cycle is evolving, a cycle in which the brain, which ultimately is derived from the gene, will, within a relatively short time, establish direct communication with the gene.