THE FIFTH DAY

The Origin of Fish and Birds

THE EIGHTH MEETING

The Theory of Evolution

Dean Smalley

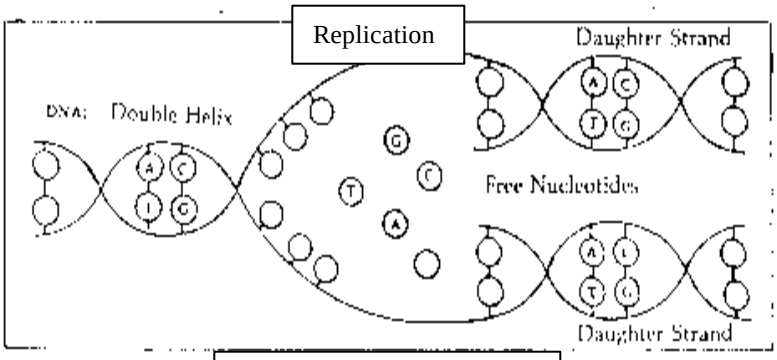
Tonight we come to the fifth day of creation which deals with the origin of the fish and birds. We will devote only one meeting to this day; and we decided that this would be an appropriate place to discuss the theory of evolution, which maintains that birds have evolved from fish. However, the speakers will merely discuss the evolution of species in general, and reserve the evolution of man for the sixth day of creation which deals with the origin of man. Here is the Scriptural account of the fifth day:

And God said, "Let the waters bring forth swarms of living creatures, and let the birds fly above the earth across the firmament of the heavens." So God created the great sea monsters and every living creature that moves, and which swarm in the waters according to its kind. And God saw that it was good. and God blessed them saying "Be fruitful and multiply and fill the waters in the seas, and let the birds multiply on the earth." And there was evening and there was morning, a fifth day (Gen 1:20-23).

Dr. Arthur Schonfield

Evolution is a big subject and there are many ways of presenting it, most familiarly from paleontology, the study of the fossil record. But I have chosen tonight to concentrate on molecular biology because this science stresses the most important mechanism of evolution, mutation, and also because of the current interest in recombinant DNA research which we plan to examine in some detail during one of our meetings on the sixth day.

I would like to read tonight from the Nobel laureate, Jacques Monod's classic work *Chance and Necessity* which first appeared in 1970. Monod, unfortunately, does not have the easy popular style of Jacob Bronowski or Carl Sagan, so let me begin by giving a little background on a few of the things he takes for granted.



DNA Replication

This diagram shows the double helix structure of DNA, deoxyribose nucleic acid, which was discovered by Watson and Crick in 1953, and the phenomenon of "replication," which explains how a particular gene can be handed down from one generation to the next. The double helix is like a spiral staircase, the rungs being made up of four chemical bases called nucleotides: adenine, thymine, cytosine, and guanine - indicated by the letters A, T, C, G. During the process of meitosis or cell division, the chromosomes in the nucleus split in half. At the same time, the genes on the chromosomes which are made up of DNA also split in half, and the half gene rebuilds itself into a whole gene. In the diagram, we are in the nucleus of the cell which is full of free nucleotides, the four bases indicated by the letters A, T, C, G. When the gene splits in half, the bases in the two half-strands pick up their opposite numbers from the free nucleotide pool. A can only pick up T, C only G, and vice versa. In this way, the two new daughter strands are formed from the single parent strands.

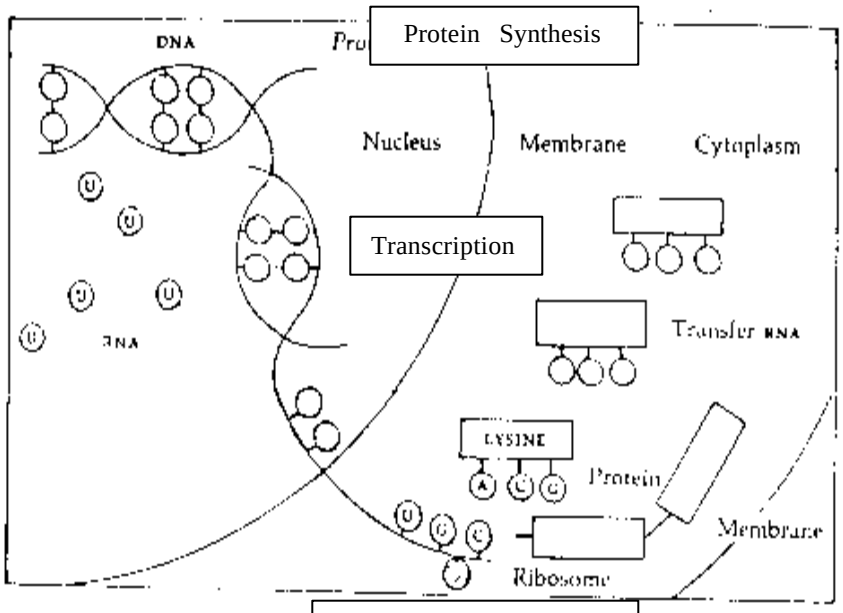
In 1961, Marshall Nirenberg cracked what is called the "genetic code." This code explains how the cell goes from RNA (ribose nucleic acid) to protein. The various proteins, the basic building blocks of life, are made up of long chains of twenty different amino acids. Using the metaphor of language, the nucleic acid RNA is considered one language, and is translated into a sentence in amino acids which says: “make this this particular kind of protein.”

In the diagram I have included only a quarter of the code, just to give us a little idea of how it works. On the left is the Roman numeral I, meaning the first letter in the triplet code, which stands for the base uracil (U). Across the top is the Roman numeral II, meaning the second letter in the triplet code, which stands for the four bases in the nucleic acid RNA: uracil, cytosine, adenine, and guanine (U, C, A, G). The last column has the Roman numeral III, the third letter in the triplet code, and below it the four letters U, C, A, G. In the blocks are three letter abbreviations for the twenty amino acids. In the block in the upper left hand corner, the letters PHE stand for the amino acid phenyline. When we read I-II-III, the three letters for the triplet code for the upper left hand corner, we find they are U, U, U. So uracil uracil, uracil, translate into the amino acid phenyline (U, U, U = PHE). In the next block to the right, we see the letters SER, which stand for the amino acid seryl, called for by I-II-III, uracil, cytosine, uracil (U, C, U = SER), etc.

Genetic Code					
U	U	C	A	G	U
U	PHE	SER	TYR	CYS	U
	PHE	SER	Stop	TYR	U
	LEU	SER	Stop	CYS	G

Genetic Code

In this diagram we are again inside the cell, and on the left we see the process called transcription. It is similar to replication which we have just seen, only instead of making more DNA, as happens in meitosis, the cell now makes the other nucleic acid, RNA, ribose nucleic acid. The DNA again splits in half, but this time instead of picking up the base thymine from the free nucleotide pool, it picks up the base uracil, which joins only with the base adenine.



Protein Synthesis

The molecular biologists speculate that the discriminating membrane of the nucleus won't let the DNA out, and in that way the cell protects its genetic inheritance. But the uracil of RNA is a chemical signal to the membrane saying: "Let me through into the cytoplasm." Also, RNA is more fragile then the very stable DNA, and after RNA has done its work, it breaks down and its components are re-used by the cell. The single strand of RNA that enters the cytoplasm, the messenger RNA, was discovered by our author Monod and his partner Jacob in 1960. This strand is drawn to a little organelle

called a ribosome, the site of protein synthesis. This is where the translation takes place from the triplets of RNA into amino acids. The cytoplasm is also a chemical pool in which there are free amino acids. These amino acids are picked up by triplets of RNA, called transfer RNA, that are compared to little tugboats which pull their larger cargos of amino acids over to the ribosomes, where they are hooked together in long chains. In the diagram I have the messenger RNA, U, G, C, just coming up on the ribosome.These three bases call for their opposite numbers, A, C, G, which in turn call for the amino acid lysine, and we see the transfer RNA, A, C, G with the amino acid lysine in tow, coming over to the ribosome. There the lysine is hooked on to the growing chain of amino acids. When the chain reaches the end specified by the strand of RNA, the protein that has been formed will bundle itself up into a particular shape. The particular sequence of amino acids determines whether it is, for example, the protein enzyme hemoglobin to oxygenate the blood, or the protein for muscle tissue, and so forth.

With that somewhat inadequate background in this admittedly difficult subject, let me now read from Jacques Monod's *Chance and Necessity.* Here is his humorous introduction to the subject of evolution

"When one ponders the tremendous journey of evolution over the past three billion years or so, the prodigious wealth of structures it has engendered, the extraordinarily effective teleonomic performances of living beings, from bacteria to man, one may well find oneself beginning to doubt again whether all this could conceivably be the product of an enormous lottery presided over by natural selection, blindly picking the rare winners from numbers drawn at utter random.

"While one's conviction may be restored by a detailed review of the accumulated modern evidence that this conception is alone compatible with the facts (notably the molecular mechanisms of replication, mutation, and translation), it affords no synthetic, intuitive, and immediate grasp of the vast sweep of evolution. The miracle stands 'explained'; it does not strike us as any less miraculous. As Francois Mauriac wrote, 'What this professor says is far more incredible than what we poor Christians believe.'" [1]

Monod briefly reviews abiogenesis, the origin of life from non-life, which we discussed on the third day of creation. If you remember, before the appearance of the plants, the earth's atmosphere was composed mainly of methane, water vapor, and ammonia. Then in Oparin's "primordial soup," by sheer chance the basic chemicals of life were formed - the amino acids from which the proteins are made, and the bases which make up the DNA. This theory, we saw, has been more or less substantiated by the experiments of Stanley Miller, Lesley Orgel, and others.

The two basic chemicals of life are protein and DNA. The building blocks of life are the proteins, and the particular proteins are determined by the particular sequence of DNA. This poses, admits Monod, "Herculean problems," similar to the old riddle, "which came first, the chicken or the egg?" which in modern chemical terms would be rendered: "which came first, the protein or the DNA?"

“ ...When and how did this circle become closed? It is exceedingly difficult to imagine...The riddle remains, and in doing so masks the answer to a question of profound interest. Life appeared on earth; what, before the event, were the chances that this would occur? The present structure of the biosphere far from excludes the possibility that the decisive event occurred only once. Which would mean that its a priori possibility was virtually zero.

“The idea is distasteful to most scientists. Science can neither say nor do anything about a unique occurrence. It can only consider occurrences that form a class, whose a priori probability, however faint, is yet definite...The universe was not pregnant with life, nor the biosphere with man. Our number came up in the Monte Carlo game. Is it any wonder, if like the person who has just made a million at the casino, we feel strange and a little unreal?” [2]

Monod calls the cell a "chemical machine," a little automated factory for assembling proteins. The nucleus is the cybernetic or governing mechanism; the messenger RNA is like a program on perforated tape or punched cards, and the ribosomes like servo-mechanisms, tiny automated machine tools, which assemble the proteins.

Now Monod, of course, recognizes that this little "machine," the cell, as we know it today, is far too complicated to have arisen by chance in Oparin's soup. Today's cell must be the product of a long evolution. The fact that this "protein assembly machine" is universal, every living creature having the same translation mechanism, seems to imply that life rose only once. If life had arisen by chance more than once, it is hardly likely that by chance it would have evolved the same code; there would have been a variety of differeent chemical machines, each with different codes. In that case every living creature on earth is descended from a single proto-cell which arose by chance in the p[rimordial soup. There are of course, none of these very simple cells around today.

“…The fact that the code is now deciphered and known to be universal at least allows us to frame the problem in precise terms; simplifying just a little, in those of the following alternatives. Either

a) Chemical - or, to be more exact, stereo-chemical - reasons account for the structure of the code; if a certain codon [triplet of RNA] was ‘chosen’ to represent a certain amino acid, it is because there existed a certain stereo-chemical affinity between them; or else

b) The code's structure is chemically arbitrary; the code as we know it today is the result of a series of random choices which gradually enriched it.

“The first of these hypotheses seems by far the more appealing. To begin with, because it would explain the universality of the code. Next, because it permits us to imagine a primitive translation mechanism in which the sequential aligning of amino acids to form a polypeptide [protein] would be caused by direct interaction between the

amino acids and the replicative structure itself. Finally and above all, because in principle this hypothesis would be verifiable. And numerous attempts to verify it have indeed been made: on the whole they have proven negative to date.

"It may be that we have yet to hear the last word on this score. Pending the not-very-likely confirmation of this first hypothesis, we are reduced to the second, displeasing from the methodological viewpoint - which does not by any means signify that it is incorrect. Displeasing on other grounds also. It does not explain the code's universality. One is brought then to the assume that, out of a multitude of efforts at elaboration, a single one survived. Which in itself makes sense, but leaves us unprovided with any model of primitive translation. Here speculation must take over: the field is only too open." [3]

Monod suggests his own hypothetical model for the proto-cell that first evolved in the primordial soup. Perhaps, he says, the protein was synthesized right on the replicative structure of the DNA. As the double helix split in half, the chains of amino acid were hooked together right on the single strands of DNA. This would mean that the proto-cell would need no nucleus, just an outer membrane, and would have no need of messenger RNA, transfer RNA, or ribosomes.

Monod then explains the chemical accidents called "mutations," which enabled these first primitive cells to evolve into higher living forms. But let me once again give a little background for Monod's heavy-handed presentation. Unfortunately the Jacob Bronowskis and the Carl Sagans are somewhat of a rarity among science writers, and the Jacques Monods are much more typical.

In the diagram we see the parent strand of DNA with the bases A, T, G, C. They are supposed to pair with their opposite numbers, A with T, G with C, and vice versa. When the DNA splits in half, these bases are picked up from the free nucelotide pool in the nucleus. Suppose something went wrong - for example: the C, which is supposed to pick up a G, picked up an A instead, as I have indicated on the top daughter strand, or when the helix started to spiral, one twist caught three pairs and the next, one, as I have indicated on the bottom daughter strand. Remember, we now think of the cell as an automated protein factory, so the kind of things that go wrong are similar to the accidents that happen on a factory assembly line.

"...Various mutations have been identified as caused by:

1) The substitution of a single pair of nucleotides for another pair;

Mutations

2) The deletion or addition of one or several pairs of nucleotides and

3) Various kinds of 'scrambling' of the genetic text by inversion, duplication, displacement, or fusion of more or less extended segments.

“We call these events accidental; we say that they are random occurrences. And since they constitute the only possible source of modifications in the genetic text, itself the sole repository of the organisms's hereditary structures, it necessarily follows that chance alone is at the source of every innovation, and of all creation in the biosphere. Pure chance, absolutely free but blind, at the very root of the stupendous edifice of evolution: this central concept of modern biology is no longer one among many other possible or even conceivable hypotheses. It is today the sole conceivable hypothesis, the only one that squares with observed and tested fact. And nothing warrants the supposition - or the hope - that on this score our position is ever likely to be revised.” [4]

Let me conclude my presentation tonight with Monod's brief comment on our fifth day of creation, the origin of fish and birds. By the term "teleonomic," Monod does not intend any connotation of purpose or design. He defines teleonomy as "the transmission from generation to generation of the invariance content characteristic of the species."

“It is the teleonomic apparatus, as it functions when a mutation first expresses itself, that lays down the essential initial conditions for the admission, temporary or permanent, or rejection of the chance-bred innovative attempt. It is the teleonomic performance, the aggregate expression of the properties of the network of constructive and regulatory interactions, that is judged by selection; and that it is why evolution itself seems to be fulfilling a design, seems to be carrying out a ‘project,’ that of perpetuating and amplifying some ancestral ‘dream’...As we all know, the great turning points in evolution have coincided with the invasion of ecological spaces. If terrestrial vertebrates appeared and were able to initiate that wonderful line from which amphibians, reptiles, birds, and mammals later developed, it was originally because a primitive fish ‘chose’ to do some exploring on land, where it was however ill-provided with means for getting about. The same fish thereby created, as a consequence of a shift in behavior, the selective pressure which was to engender the powerful limbs of the quadrupeds. Among the descendants of this daring explorer, this Magellan of evolution, are some that can run at speeds of fifty miles an hour; others climb trees with astonishing agility, while yet others have conquered the air, in a fantastic manner fulfilling, extending, and amplifying the ancestral fish's hankering, its ‘dream.’" [5]

So in conclusion let me repeat the most important line I read from Jacques Monod, which is the unanimous consensus of the scientific community. "Pure chance, absolutely free but blind, at the very root of the stupendous edifice of evolution...is today the sole conceivable hypothesis, the only one that squares with observed and tested fact. And nothing warrants the supposition - or the hope - that on this score our position is ever likely to be revised."

Fr. Robert A. Staatz

I would like to second Dr. Schonfield on the difficulty of our subject matter tonight, so a little repitition might be helpful - *repetitio est mater studiorum*; "repetition is the mother of studies." But I will spare our students a rerun on the processes of DNA

replication, translation and protein synthesis, and just repeat the conclusion of Dr. Schonfield's presentation - the actual mechanism of evolution, chance mutation. This is again from Fr. Owen Garrigan's *Man's Intervention in Nature:*

"It is not surprising then, that in such a long series of sequential operations, with so many 'bits' of information to be processed that there should be a certain more or less constant percentage of mistakes. The most efficient machine will make a finite number of errors. Perhaps one mistake in a million operations would seem near perfect, but even this relatively good record could result in an abnormally high mutation rate in a living organism. Biological processes are remarkably accurate in this regard. The incidence of a measurable mistake (mutation) in a given gene may be as low as only one in a billion offspring, but it is not zero.

"A single nucleotide out of place or miscopied can cause an error all along the line. If such an error, a 'point mutation,' prevents an essential activity in the offspring, there will be no living progeny: the mutation will be lethal. The nucleotide change may occur in a non-specific ('nonsense') part of the DNA, if such parts exist; such a change would be ineffectual. If the mutation results in a change in a protein in part of the protein that does not remove an essential function, while at the same time it modifies that function, then the mutation can become a permanent part of the progeny and it may have an important effect on the genetic future of the race. It is this intermediate type of mutation, neither lethal nor ineffectual, that has the most practical importance, especially with regard to evolution. Protein changes that produce functional changes, in an organism faced with a changing environment, will be sorted out in the offspring. That is to say, the principle of natural selection will favor one protein form over another. A protein having one functional capability will confer a survival value...different from that of another, modified protein. The random, but statistically constant level of mistakes in information transfer brings to every living species a certain rate of mutation. Every gene in every living system, by reason of its complexity and the chance of error in making exact copies, has a built-in possibility, indeed a statistical necessity for change. Experimental evidence gathered along these lines has revealed the outlines of a chemical basis for the evolution of organisms." [6]

With that little repeat for an introduction let me go now to the main part of my presentation for tonight, that is, the reaction of the Church to the theory of evolution. Garrigan continues:

"Theories of evolution are not without serious implications for the Christian. In response to Darwin the Churchmen of the nineteenth century often reacted bitterly to the prospect of man's being equated with animals, since this is what they thought evolution must imply. On their part, some evolutionists rejoiced over the 'death of Adam.' In an episode that typified the hostile relationship between religion and science, the Anglican Bishop Samuel Wilberforce confronted Thomas Henry Huxley in the famous Oxford debate of 1860. The exact details of the encounter and the nuances of the dialogue are not certain. It has been reported that the eloquent bishop, then fifty-four years old, spoke first. He referred to the high esteem in which Victorian England held womanhood and

climaxed his oration with the *ad hominem* question, 'Will the learned biologist tell me whether he is descended from the apes on his grandfather's side or on his grandmother's side?' During the guffaws that followed what seems to have been a breach of professional etiquette, Huxley who had coined the word 'agnostic' to describe his own attitude toward religion, whispered to his companion, 'the Lord hath delivered him into my hands.' The aroused biologist, then thirty-five, rose to reply: 'If, then, the question is put to me would I rather have a miserable ape for a grandfather or a man highly endowed by nature and possessing great means and influences and yet who employs those faculties and that influence for the mere purpose of introducing ridicule into a grave scientific discussion - I unhesitatingly affirm my preference for the ape.'" [7]

The Catholic Church unfortunately, has also had its share of Bishop Wilberforces, but unlike Galileo, Darwin was never officially condemned by the Magisterium.

"Many individuals in the Church were undoubtedly defensive or even frightened in their posture toward evolution. On the question of man's origin, open-minded Christians seem to have been in the minority. The closer one comes to responsible authority in the Church, however, the less tendency one finds for narrow condemnations. The First Vatican Council in 1870 gave the commonsense advice that the same God is the author of reason and revelation. One truth cannot contradict another. Pope Leo XIII in 1893 applied the teaching of St. Augustine to cases of apparent conflict between science and the Bible: 'Whatever...[scientists] can really demonstrate to be true of physical nature, let us show to be capable of reconciliation with our Scriptures,' and, 'The Holy Spirit [in the Scriptures]...did not intend to teach man these things in no way profitable unto salvation.'" [8]

St. Augustine's famous notion of *rationes seminales*, seminal causes, has often been considered a precursor of evolutionary thought. Augustine found no difficulty in showing that this notion was "capable of reconciliation with our Scriptures."

"St. Augustine speaks, in a famous passage, of *rationes seminales*, the seeds or germs present in the beginning of whatever would come to be in time. Some moderns have laid claim to Augustine as an early herald of the evolutionist gospel. His idea that God did not intervene in his creation once he had produced the original universe is quite consistent with the evolutionary idea. He may indeed have intended that the seeds be understood as active powers in matter and not merely as passive potencies." [9]

Pope Leo XIII's *Providentissimus Deus* appeared in 1893 before the concept of Formsgeschichte, the study of literary forms, was accepted by the Church. This did not take place, as I have pointed out, until fifty years later with the publication of *Divino Afflante Spiritu* by Pius XII. Since it is now generally conceded that the literary form of the Hexameron is the myth, it has become impossible "to show" that the theory of evolution is "capable of reconciliation with our Scriptures." Had Leo XIII lived today, he would doubtless have phrased it: "Whatever [scientists] can really demonstrate to be true of physical nature [the theory of evolution], let us show to be capable of reconciliation with our theology." Of course the one who has done the most to reconcile the theory of

evolution with theology is Teilhard de Chardin.

"...An increasing number of theologians have come to respect the well-documented majority opinion among scientists concerning evolutionary origins. The trend is to leave astronomy to the followers of Galileo, and biology to the followers of Darwin, and allow as an acceptable working hypothesis the notion of cosmic evolution, including mankind's. The Book of Genesis is seen as a religious account of man's total dependence on God, written perhaps a thousand centuries or more after the appearance of man on this planet, adapted to a people in a non-technological culture, with poetic intuition that celebrates in lyric fashion the glory of the Creator. Evolutionary insights are more and more applied to theology, especially since the posthumous publication of the works of Pierre Teilhard de Chardin. In fact the view is beginning to emerge, inverting the common opinion of the last century, that revelation says less about evolution than evolution says about the theology of creation...

"Religion supplies motives for wishing and believing that the evolution of man is true. Evolutionary theory can inspire enthusiasm for the unity and coherence, the simplicity and elegance of Divine Providence. The God of evolution seems so much wiser and more powerful than the watchmaker God who is forever returning to his masterpiece to readjust the mechanism so that it can function in a new way. In a famous passage in the Origin of Species, Darwin exclaimed: 'There is a grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one.' (Today we would extend Darwin's remark to include the origin of life from inanimate nature. The grandeur is not lessened if the manner of God's 'breathing' was actually a planned process of development from a single element to complex molecules and from non-living molecules into cells.) There are many reasons to prompt Darwin and other Christians to welcome evolution and to celebrate its function as the method by which God accomplishes his creation." [10]

Let me conclude with the Jesuit Robert Faricy and his *Teilhard de Chardin's Theology of the Christian in the World.* Teilhard is just as emphatic in his own way about the fact of evolution as Jacques Monod is in his:

"...Evolution is not just a hypothesis or a theory. 'It is much more: it is a general condition to which all theories, all hypotheses, all systems must bow and which they must satisfy henceforward if they are to be thinkable and true.'" [11]

Mrs. Maria Stepan

Jacques Monod's book *Le Hasard et la Necessite,* "Chance and Necessity," appeared in 1970 and was quickly translated into English. In 1972 there appeared a rebuttal of Monod by George Salet, a Catholic layman, who is a mathematician and a former pupil of Monod's partner and fellow Nobel laureat, Francois Jacob. Unfortunately Salet's excellent book entitled *Hasard et Certitude*, "Chance and Certitude," has not yet been translated into English. Salet, for the sake of argument, grants Monod's description of the cell as a "chemical machine":

"The origin of the protein assembly machine

"By 'protein assembly machine' I understand the sum total of structural genes and regulatory genes which exists in every cell and which governs not only the linking of amino acids, according to given sequences, into proteins, but also the synthesis of all tools necessary for the assembly job, messenger RNA, ribosomes, transfer RNA, and a considerable amount of enzymes.

"Can protein synthesis be effected by procedures other than those known to us or particularly by simpler procedures? It is quite possible. We can imagine, for example, a system without messenger RNA where the 'reading' would be made directly on the DNA. We can even imagine (although the viability of the system seems doubtful) an assembly of amino acids by direct contact with the DNA. [This was the hypothetical model of the primitive cell suggested by Monod.] Ribosomes and transfer RNA would then be useless, but the enzymes which would function would be different than the present ones...

"But assuming that the systems I have just envisaged are viable...it still remains that, simpler or not, they are different from the present one, in exactly the same way that a two cycle engine is different from a four-cycle engine." [12]

A two-cycle engine is a simple engine used for example in model airplanes, while the more complicated four-cycle engine is used in automobiles. Monod is saying equivalently, that the chemical machine, the cell, began as a simple two-cycle engine and progressed gradually to a four-cycle engine. But there is no step in between a two and a four cycle engine; a third cycle would not only be useless but impossible!

"Could the machine have 'progressively' passed from one system to another by a series of mutations? This is really impossible; for, inasmuch as every breakdown of the machine is lethal, every intermediary disposition must be viable. It is therefore just as impossible to pass 'progressively' from a system without ribosomes and without transfer RNA (assuming such a system to be viable) to the present system, as it is to imagine a continual chain of *viable* intermediaries between a two-cycle and a four-cycle engine. [Salet's emphasis]

"Passing from one system to another, therefore, cannot have taken place except by a *single mutation*, which means - either that the gene system which constitutes the protein assembly machine has been modified in one mutation only, a thing so inconceivable that no one would dare hold it [That is, that the two-cycle engine went to the four in one big jump.], or that a set of supplementary genes appeared which underwent *a long series of genetic mutations*, thereby acquiring the character to correspond to the fabrication of proteins by the new system. Let us notice that the fabrication *would have to continue by means of the old system during this whole series of mutations.* A sudden change would have taken place when the new set of genes acquired by chance the desired character." [13]

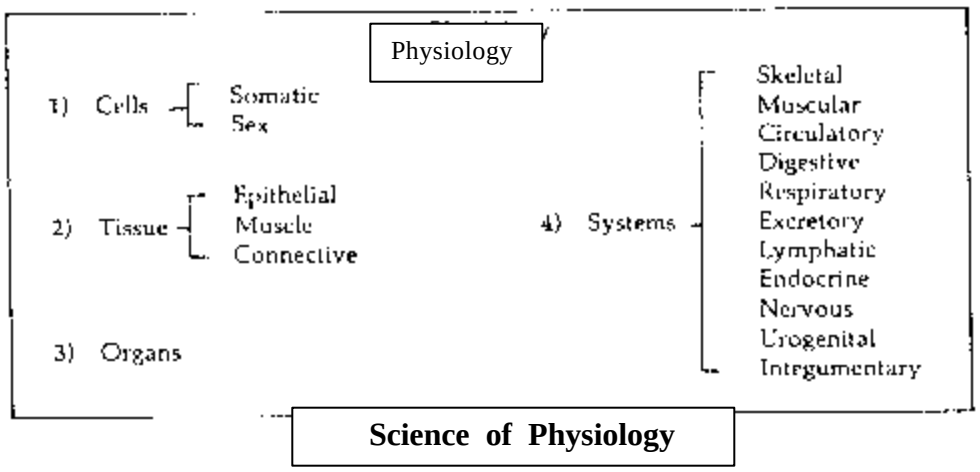
The two-cycle and the four-cycle engines are completely different designs. For example, in the two-cycle engine the intake and exhaust ports are on the sides of the cylinder, while on the four-cycle engine they are on the top. So equivalently, while the two-cycle engine was still functioning, it would have to grow new ports and valves on the top of the cylinder. When these ports were completed, the new system would cut in. Imagine Monod trying to explain this theory to a group of mechanics!

"It is a profound illusion to believe that certain mechanical functions can have been exercised by very simple mechanisms. Indeed, just as with our machines, a biological system *could not be simplified below a certain minimum*. The complexity of a machine does not result from a precise intention of its author, but from a necessity that *it be able to perform the function assigned to it.* Buy the cheapest radio set on the market. Look at its interior and you will understand that it would not be possible to listen to a broadcast with a very simple set. *There is a minimum of complexity below which it is impossible to descend and which results from the nature of things.*

"Likewise a biological device able to put together amino acids in an order defined by a DNA sequence could not be a simple device any more than a machine able to fabricate pearl necklaces, with pearls of different type arranged in an order defined by punched cards, could be a simple machine.

"It is certainly possible that the biological processes of protein assembly known to us are not the simplest processes possible. Still, it is true that this simpler system must be somewhat complex, *if it is capable of carrying on its function*. We may imagine because of unknown (in fact, unimaginable) reasons, that this simpler device came into existence *progressively*. What is impossible to admit is that it could have been able to work before it was completed. Let me repeat again, that a car does not work less well without a carburetor, or an ignition system, but rather not at all." [14]

So by reducing the living cell to a chemical machine and the theory of evolution to accidental mutations, Monod has unwittingly made that theory unworkable.



Louis Vialleton, a professor of physiology at the University of Montpelier in France, was one of the most articulate opponents of the theory of evolution. He maintained that the science of physiology proved that the theory of evolution, as proposed by Darwin and others, was completely untenable. On the blackboard I have an outline of the subject matter covered in physiology. First we have the cell, the basic unit of life, of which there are two kinds - the somatic or body cell, and the sex cell, which is really only a half cell. Secondly the cells combine to form tissue of which there are four kinds - epithelial (e.g. skin), muscle, connective, and nerve tissue. Thirdly the tissues combine to form organs, such as the eye. Fourthly these organs are arranged into eleven systems, the skeletal, muscular, circulatory, digestive, respiratory, excretory, lymphatic, endocrine, nervous, urogenital and integumentary.

The evolutionists seem to hold that evolution proceeds organ by organ. For example, Darwin said that the thought of the evolution of the eye made him sick, it seemed so impossible, yet contemporary evolutionists don't hesitate to claim that the eye evolved forty separate times. Vialleton maintained that you can't speak of the eye, or any organ for that matter, as having evolved by itself, because the eye is part of a whole interdependent system. If you want to speak of evolution, you have to speak in terms of the whole system or not at all. The evolutionists do not attempt to respond to Vialleton's criticisms, but have simply ignored them. Salet has also been getting the silent treatment, and his book has been ignored by the whole secular humanist Establishment. Here is Salet's summary of Vialleton's argument:

"Mutations happen by chance, and therefore we must see if chance, even if aided by natural selection, has been able to achieve any results...The desired result is that the new production not be an incoherent ensemble, but an 'organ,' that is something possessing different parts which *complement one another so that the whole may be able to exercise a definite function.* If we consider, e.g., the eye, it is necessary among other requirements that the crystalline be transparent and that its curvature, and therefore its focal distance, have a definite relation with its distance to the retina...Another result to be attained is that *the new organ form with its organism a coherent whole*. For example, an eye would have no use at all if it should develop inside the stomach.

"Besides, an organ is not something you attach to an organism the same way you attach a rear view mirror to an automobile door. Its *coordination* with other already existing organs supposes a more or less profound revision of the whole living being; for example, the eye, even assuming that it appears on a suitable location and properly connected by nerves to the sensorial and motor centers of the brain and the cerebellum, would serve no purpose at all if these nervous centers had not at the same time become fit to use the stimuli received by the optic nerve in a manner useful to the individual...Vialleton showed how impossible it was for the new organs to form a coherent whole with what existed before, and therefore a need for a recasting of the whole individual. The reasons brought forward by...him have never been the object of serious discussion. I recall them briefly...in the hope that they will not fall into oblivion." [15]

Let me go on from the argument against evolutionism from physiology to that from genetics. We have just heard Jacques Monod claim that the science of genetics has established evolutionism as a proven fact. Let me cite another geneticist, Prof. Maciej Giertych of the Polish Academy of Sciences' Institute of Dendrology. This is from the Foreward to the excellent *Creation Rediscovered* by the Australian Catholic layman, Gerard J. Keane:

"Gradually as my children got to the stage of learning biology in school and discussing their problems with dad, I realized that the evidence for evolution shifted from paleontology and embryology to population genetics. But population genetics was my subject!...Without my noticing it my special field had become the supplier of the most pertinent evidence supporting the theory. If evolution was proven in some field I was not familiar with, I understood the need to accommodate my field to this fact, to suggest explanations how it occurred in terms of genetics. But to claim that these attempted explanations are the primary evidence for the theory was quite unacceptable to me...

"My primary objection as a geneticist was to the claim that the formation of races, or microevolution as it is often referred to, is a small scale example of macroevolution - the origin of species. Race formation is of course very well documented. All it requires is isolation of a part of a population. After a few generations due to natural selection and genetic drift the isolated population will irreversibly lose some genes, and thus, as long as the isolation continues, in some features it will be different from the population it arose from. In fact we do this all the time when breeding, substituting natural with artificial selection and creating artificial barriers to generative mixing outside the domesticated conditions. The important thing to remember here is that a race is genetically impoverished relative to the whole population. It has fewer alleles (forms of genes). Some of them are arranged into special, interesting, and rare combinations. This is particularly achieved by guided recombination of selected forms in breeding work. But these selected forms are less variable (less polymorphic). Thus what is referred to as microevolution represents natural or artificial reduction of the gene pool. You will not get evolution that way. Evolution means construction of new genes. It means increase in the amount of genetic information and not reduction of it.

"The evolutionary value of new races or selected forms should be demonstrable by natural selection. However if allowed to mix with the general breeding population new races will disappear. The select genes they have will disperse again, the domesticated forms will go wild. Thus there is no evidence for evolution here." [16]

We also heard Jacques Monod claim in very emphatic terms that the actual mechanism of evolution is random mutations. "...this central concept of modern biology is no longer one among other hypotheses. It is today the sole conceivable hypothesis, the only one that squares with observed and tested fact. And nothing warrants the supposition - or the hope - that on this score our position is ever likely to be revised." It is a real joy to watch Professor Giertych shoot this arrogant claim full of holes:

"Mutations figure prominently in the evolution story. When in the early sixties I

was starting breeding work on forest trees everyone was very excited about the potential of artificial mutations. In many places around the world special 'cobalt bomb' centers were established to stimulate the rate of mutations. What wonderful things we were expecting from increased variability by induced mutations. All of this work has long since been abandoned. It led nowhere. All we got were deformed freaks, absolutely useless in forestry. Maybe occasionally some oddity could be of ornamental value, but never able to live on its own in natural conditions. A glance through literature on mutations outside forestry quickly convinced me that the pattern is similar everywhere. Mutations are either neutral or detrimental. Positive ones if they do occur are too rare to be noticeable. Stability in nature is the rule. We have no proofs for evolution from mutation research." [17]

Professor Giertych concludes his argument against evolution from genetics:

"No. Genetics has no proofs for evolution. It has trouble explaining it. The closer one looks at the evidence for evolution the less one finds of substance. In fact the theory keeps on postulating evidence, and failing to find it, moves on to other postulates (fossil missing-links, natural selection of improved forms, positive mutations, molecular phylogenetic sequences etc.) This is not science.

"A whole age of scientific endeavor was wasted searching for a phantom. It is time we stopped and looked at the facts. Natural sciences failed to supply any evidence for evolution. Christian philosophy tried to accommodate this unproven postulate of materialist philosophies. Much time and intellectual effort went in vain leading only to negative moral consequences." [18]

Let me go on now from Dr. Schonfield's presentation to that of Fr. Staatz. While it is true as Fr. Staatz says, that some members of the scientific community were originally attracted to the evolutionary philosophy of Fr. Teilhard de Chardin, many were not, among whom was Jacques Monod. Let me also read a few excerpts from his *Chance and Necessity:*

"The biological philosophy of Teilhard de Chardin would not merit attention but for the startling success it has encountered in scientific circles. A success which tells of the eagerness of the need to revive the covenant. Teilhard revives it, and does so nakedly. His philosophy, like Bergson's, is based entirely upon an evolutionist postulate. But, unlike Bergson, he has the evolutionary force operating throughout the entire universe, from elementary particles to galaxies: there is no 'inert' matter, and therefore no essential distinction between "matter" and 'life.' His wish to present this concept as 'scientific' leads Teilhard to base it upon a new definition of energy. This is somehow distributed between two vectors, one of which would be (I presume) 'ordinary' energy, whereas the other would correspond to the upward evolutionary surge. The biosphere and man are the latest products of this ascent along the spiritual vector of energy. This evolution is to continue until all energy has become concentrated along the spiritual vector: that will be the attaining of 'point omega.'

“Although Teilhard's logic is hazy and his style laborious, some of those who do not entirely accept his ideology yet allow it a certain poetic grandeur. For my part, I am most of all struck by the intellectual spinelessness of this philosophy. In it I see more than anything else a systematic truckling, a willingness to conciliate at any price, to come to any compromise. Perhaps, after all, Teilhard was not for nothing a member of that order which, three centuries ago, Paschal assailed for its theological laxity.” [19]

Jacques Monod, although he had a Calvinist father and a Jewish mother, was a militant atheist and actually said, "The only thing one can do is to die without calling the priest to one's bedside." [20] But even he seems to be saying here, that he would rather hear real Christianity from a Catholic priest, even though he doesn't believe it, rather than Christianity watered down by secular humanism.

Let me go on now from Fr. Staatz to Rev. Swezey. If you remember on the second day of creation, which deals with the origin of the universe, I mentioned that St. Thomas Aquinas teaches that creation out of nothing cannot be demonstrated by either science or philosophy but must be taken simply on faith. For this reason I suggested at the time that Creationism versus Evolutionism was not the best of dichotomies, and that the creationists were placing an unnecessary burden on themselves by maintaining that creationism is not a strictly religious but also a scientific idea. I suggested a more proper dichotomy might be Fixism versus Evolutionism, and in the light of what we have just heard from Maciej Giertych, to use the words of Jacques Monod, "[fixism] is today the sole conceivable hypothesis, the only one that squares with observed and tested fact." For these reasons many Catholic creationists now prefer to use the term "origins" rather than "creationism," since it also can be used in a scientific sense.

Let me read a humorous presentation of fixism from the great Catholic controversialist, Hilaire Belloc:

“If Natural Selection be true, then what we call a pig is but a fleeting vision; and all the past he has been becoming a pig, and all the future he will spend evolving out of pigdom, and pig is but a moment's phase in the eternal flux, while all around us should be quarter-pigs, half-pigs, near-pigs, all-but-pigs, slightly-super-pigs, just beginning - and so on. But there aren't. There are just pigs. In other words, the evidence is all in favor of Fixed Types and against all ceaseless process of change.” [21]

Of course, Darwin replied that evolution is indeed proceeding all around us, but it is so gradual that we don't notice it. But Darwin was actually a much better scientist than many of his disciples today. He said that if experimental proof of evolution was not forthcoming within a few years, he would abandon the theory. Darwin was a pigeon fancier and was confident that he could breed a new species of bird within ten years. Huxley thought too that by breeding sheep he would be able to produce a new species of animal within twenty years. Later generations of evolutionists, such as Morgan, Muller and Dobzhansky, have continued these experiments by tinkering with one of the most famous insects in science, the fruit fly *Drosophila melanogaster*. They drastically increased the mutation rate by bombarding these little creatures with X rays and by

artificially selecting and isolating apparently favored individuals, they hoped to produce a new species within a few years.

Here is the Columban Father, Patrick O'Connell, from his wonderful *Science of Today and the Problems of Genesis* to which I will be referring frequently when we study the evolution of man:

"If a species is identified as a freely interbreeding community, no new animal species has yet been bred by any experimenter. This is very remarkable in view of the fact that breeding experiments lasting over some thirty years have been made with the fruit fly *Drosophila melanogaster*. This produces about twenty-five generations a year, hence some 900 successive generations of this species have been bred in the laboratory in the unsuccessful attempt to convert it into another type. This corresponds to about 30,000 years of human existence." [22]

Fr. O'Connell was writing in 1959 and these experiments on *Drosophila* have continued to this day, and still no new species.

Let me conclude with my own presentation from the Tradition and Magisterium of the Church. We heard Fr. Staatz claim that St. Augustine had no trouble showing that his own crude evolutionary ideas were "capable of reconciliation with our Scriptures." Cardinal Ernesto Ruffini in his *excellent The Theory of Evolution Judged by Reason and Faith*, has a long study of the thought of St. Augustine in this matter. Here are his summary and conclusions:

"The evolutionists maintain: 1) That the differentiation of the species is the product of successive generations; 2) that God's activity in regard to the world is restricted to the initial creative act. [Cardinal Ruffini is, of course, speaking of theistic not atheistic evolution.]

"St. Augustine's doctrine is diametrically opposed:

"1) Corresponding to every species or different nature is a particular *ratio seminales* placed in the world by God the Creator as a scheme or invisible image, but capable of actuality in the course of time by His omnipotent word.

"2) In the beginning God created all organisms together in a quasi-seminal state, but it is He, and He alone, who causes them to arise in the course of the centuries, that is, He causes them to pass from the seminal state into the actual state according to a fixed plan, by means of the providential government to which Jesus refers in the Gospel: *Pater usque nunc operatur et ego operor* ('the Father works even until now, and I work.')...This is the thought of the most wise bishop of Hippo. Therefore it is an outrage - and, worse, a real calumny - to attribute to him in any way the opinion of the evolutionists, however moderate they may be." [23]

Let me go on now to the Magisterium of the Church. In 1950 Pope Pius XII

issued his encyclical *Humani Generis* which was directed in large part against the works of Fr. Teilhard de Chardin then circulating privately throughout the Church:

"Looking at those outside the fold of Christ, one can easily discern the principal trends not a few learned men follow. Some are imprudent and indiscreet enough to hold that the so-called theory of evolution, although not yet fully proven even in the domain of natural sciences, explains the origin of all things, and they go so far as to support the monist and pantheistic notion that the whole world is subject to continual evolution. Communists eagerly seize upon this theory in the hope of depriving souls of every idea of God and of defending and propagating the more effectively their dialectical materialism.

"The fictitious tenets of evolution, which repudiate all that is absolute, firm and immutable, have paved the way for a new erroneous philosophy, a rival of idealism, immanentism, and pragmatism, which has come to be called existentialism, because forgetful of the immutable essences of things, it concerns itself only with individual existence." [24]

This most important encyclical concentrates especially on the evolution of man, and I will return to it again when we come to the sixth day of creation which deals with the origin of man.

Rev. De Verne Swezey

Evolution is much more than a scientific theory, it has become the central dogma of secular humanism, especially establishment humanism. But the theory has been severely criticized even from within the ranks of humanism by what I have been calling the counter-culture. Accordingly, let me begin once again with one of its leading spokesmen, Theodore Roszak. This is from his review of Jacques Monod's *Chance and Necessity* which appeared in *Book World* for October of 1971:

"...What is the message Monod finds for us in the molecules of life? Its spirit is captured by the two quotations that preface the book. One from Democritus ('Everything in the universe is the fruit of chance and necessity.'); and the other from Albert Camus' *Myth of Sysiphus*, that classic existentialist hymn to heroic despair. What follows these bleak precepts is one of the most unrelenting exercises in philosophical tough-mindedness I have ever read.

"For the science Monod serves is an unsparing mistress; she enforces an 'ethic of knowledge' which is 'austere, abstract, proud.' Her single banner is 'the postulate of objectivity' which insists that nature is neutral, purposeless, devoid of value. Only one world-view is compatible with scientific truth, Monod argues; a militant atheism that embraces the radical absurdity of human existence, yet defiantly asserts man's ethical project against the world. (The moral code Monod recommends is a compassionate, democratic socialism; like most true-believing atheists, he is humane and highly principaled.) Any flinching from this cheerless reality - whether it leads to the ideological superstitions of Marxism or the 'disgusting farrago of Judaeo-Christian religiosity' - is a

plain ‘lie.’...

“The biology Monod reviews is marshalled stoically to the support of this dour vision. The details are often technological but the drift is clear. Molecular research proves that the living cell is but a ‘chemical machine.’ Its once mysterious activities - growth, metabolism, self-replication - can be reduced to routine chemical reactions. The chemistry is stupendously complex, but in no religious sense ‘miraculous.’ What once seemed to be purposiveness in the life process is fully explained by enzyme sequences and feedback mechanisms: ‘microscopic cybernetics’...

“Admire the man. It takes stamina and no little blind faith to drive one's science to such a reductionist end. Atheism is, after all, a tenuous premise (not a conclusion), and chance the most dubious god of all. Could any dogma of the churches strain credulity more than to believe that the labrynthine chemistry of life emerges from a molecular lottery?…How sad to be Jacques Monod: to stare so expertly at miracles and meanings, but never see them.” [25]

And here is another forceful critic of establishment humanism, Arthur Koestler from his excellent *The Ghost in the Machine*:

"’I refuse to believe that God plays dice with the world.’

Albert Einstein

“ ...The orthodox (‘Neo-Darwinian’ or ‘synthetic’) theory attempts to explain all evolutionary changes by random mutations (and re-combinations) of genes; most mutations are harmful, but a very small proportion happen to be useful and is retained by natural selection...’Randomness’ means in this context that the hereditary changes wrought by mutation are totally unrelated to the animal's adaptive needs - that they may alter its physique and behavior ‘in any and every direction.’ In this view, evolution appears as a game of blind man's bluff. Or, in the words of Professor Waddington - a quasi-Trotskyite member of the Establishment...: ‘To suppose that the evolution of the wonderfully adapted biological mechanisms has depended only on a selection out of a haphazard set of variations, each produced by blind chance, is like suggesting that if we went on throwing bricks together in heaps, we should eventually be able to choose ourselves the most desirable house.’" [26]

Arthur Koestler then goes on to discuss the hypothetical evolutionary step from amphibian to reptile. His criticism is based on the unanswered arguments of Louis Vialleton, which Mrs. Stepan reviewed briefly. Vialleton had said, if you remember, that you couldn't speak of evolution as having occurred organ by organ, such as the eye, but if it occurred at all it would have to have been from system to system. Here Koestler is just dealing with the reproductive systems of the amphibian and the reptile, but the same is true of all systems.

“ ...The vertebrates' conquest of dry land started with the evolution of reptiles

from some primitive amphibian form. The amphibians reproduced in the water, and their young were acquatic. The decisive novelty of the reptiles was that, unlike amphibians, they laid their eggs on dry land; they no longer depended on the water but were free to roam over the continents. But the unborn reptile inside the egg still needed an acquatic environment: it had to have water or else it would dry up long before it was born. It also needed a lot of food: amphibians hatch as larvae who fend for themselves, whereas reptiles hatch fully developed. So the reptilian egg had to be provided with a large mass of yolk for food, and also with albumen - the white of egg - to provide the water. Neither the yolk by itself, nor the egg-white itself, would have had any selective value. Moreover, the egg-white needed a vessel to contain it, otherwise the moisture would have evaporated. So there had to be a shell made of leathery or limey material, as part of the evolutionary package-deal. But that is not the end of the story. The reptilian embryo, because of this shell, could not get rid of its waste products. The soft-shelled amphibian embryo had the whole pond for a lavatory; the reptilian embryo had to be provided with a kind of bladder. It is called the allantois, and is in some respects the forerunner of the mammalian placenta. But this problem having been solved, the embryo would still remain trapped inside its tough shell; it needed a tool to get out. The embryos of some fish and amphibians, whose eggs are surrounded by a gelatinous membrane have glands on their snouts: when the time is ripe, they secrete a chemical which dissolves the membrane. But membranes surrounded by a hard shell need a mechanical tool: thus snakes and lizards have a tooth transformed into a kind of tin opener, while birds have a caruncle - a hard outgrowth near the tip of their beaks which serves the same purpose. In some birds - the honey guides - which lay their eggs like cuckoos in alien nests, the caruncle serves yet another purpose: it grows into a sharp hook with which the newly hatched invader kills off its foster-brethren, after which it amiably sheds the hook." [27]

The theory of evolution is a good example of what is called "reductionism." The evolutionists claim that mutations, which eventually led to new species, occurred one at a time. In Arthur Koestler's example, the first mutation to occur would be the egg shell, then the allantois, then the can opener, and so on. The anti-reductionist argument is called the "holist" argument, and maintains that you have to think in terms of the whole living organism, and not just in terms of the sum of its parts. The holists would say that if any of these parts, for example, the egg shell had mutated, it would have had to occur at the same time a

"Al to say, countless o o make the new cre owever small, all t liquid store in the in fact murderous, aken in isolation, w tion A occurring a million years until g alone would be are all interdepenc f blind

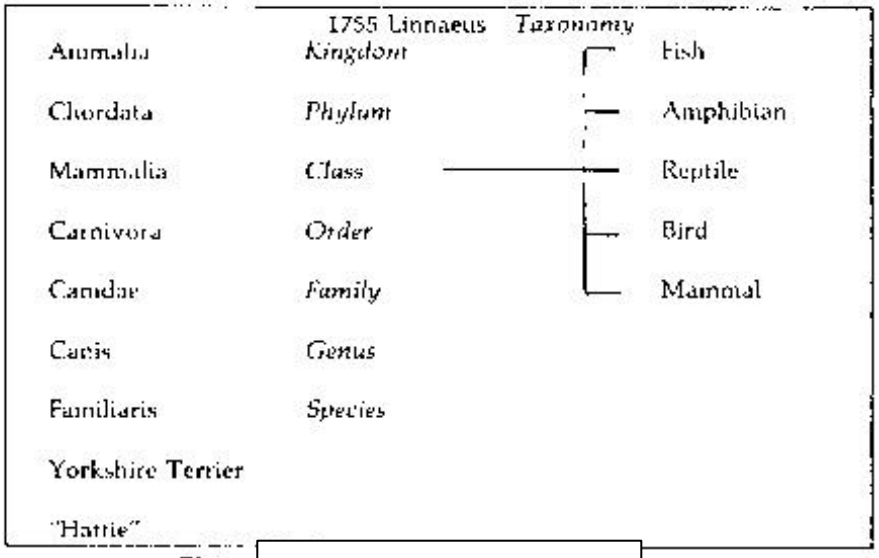


Plate x 1755 Linnaeus Taxonomy aeus

coincidences is an affront not only to common-sense, but to the basic principles of scientific explanation." [28]

Let me go on from the counter-culture movement to the creationist movement, but let me first try to clarify a few basic notions that Arthur Koestler was taking for granted. The Swedish naturalist, Carolus Linnaeus is called the father of the science of taxonomy or classification. Linnaeus divided all of Nature into three great Kingdoms: the Mineral, the Vegetable, and the Animal. The Animal and Vegetable Kingdoms he further subdivided into Phylum, Order, Family, Genus, and finally species. On the blackboard I have followed a pet dog named "Hattie" through all these categories. We begin with the Kingdom, which is in this case is Animal; the Phylum is the Chordata, or creatures having a backbone; the Class, the Mammalia, or creatures which nurse their young; the Order, the Carnivora or meat eaters; the Family, the Canidae or dog-like creatures; the Genus, Canis, or dog; the Species, Familiaris, or domestic dog, the Yorkshire Terrier; and finally the individual dog, "Hattie." So Hattie's full name is - Hattie, Yorkshire Terrier, Familiaris, Canis, Canidae, Carnivora, Mammalia, Chordata, Animalia. The fact that all the living creatures in the world can be so classified, shows that there is Design in the world put there by God. If evolution were true there would be no such order apparent but rather chaos.

Taxonomy according to Linnaeus

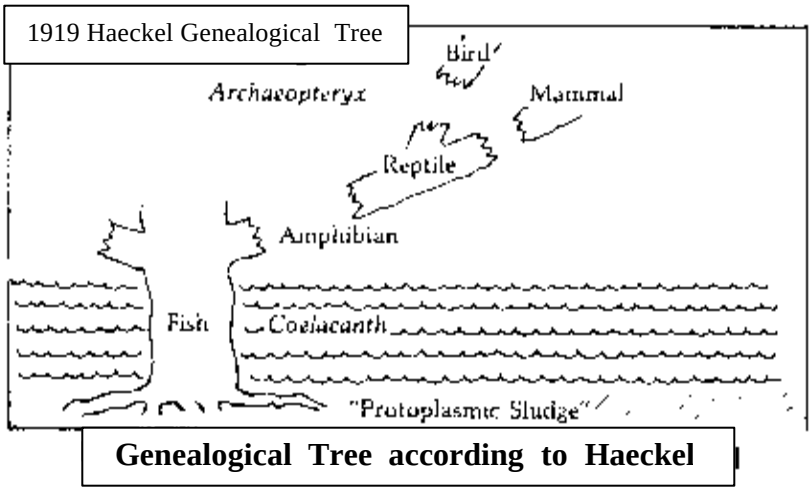
Most biblical Christians who reject evolution, distinguish between micro and macro-evolution. Micro-evolution which should not really be called evolution but rather variation, they will admit, occurs in species, genera, and up to family, which many consider to be the biblical "kind." "So God created the great sea monsters and every living creature that moves, and which swarm in the waters according to their kinds." For example, the horse and the donkey belong to the same family of horse-like creatures, but their offspring, the mule, is sterile. Thus the sterility of hybrids prevents macro-evolution or evolution between the great classes.

Ernst Haeckel, Darwin's German ally, was the first to propose a "genealogical tree" for the theory of evolution. On the right side of the "Hattie" chart, we see that Linnaeus has classified all the living creatures of the world into five great classes. (I have deliberately left out two classes of insects for purposes of simplification.) Haeckel merely took these five classes and arranged them into a genealogical tree. The five great classes are the Fish, Amphibian, Reptile, Bird, and Mammal.

We have seen that according to Haeckel, life evolved in the "protoplasmic sludge" at the bottom of the sea. These first life forms gradually evolved into fish, which then evolved into amphibians. A fish stays in the water and breathes through gills, while an amphibian goes back and forth between water and land, and breathes through lungs. The amphibians then evolved into reptiles which stay on land. Finally the reptiles split into two main branches, birds and mammals.

Haeckel also coined the phrase "missing link." He recognized that there were gaps between all the great classes, but prophesied that fossils of these missing links would soon be found, since scientists now knew just what to look for. We heard Monod speak of

the "Magellan of evolution," the fish "that found its dream," which was evidently to become an amphibian. The fossil fish the evolutionists originally thought made the transition to amphibian was the coelacanth. This particular fish was chosen because its fins were thought to be in just the right places, where they could later develop into legs. Here again is the creationist Dr. Henry Morris:



"The next major evolutionary advance must have been from fish to amphibian. Somehow the fin of the fish must have been transformed into the foot of the amphibian, not to mention a myriad of other necessary changes. To date, however, no fossil of a 'fishbian,' with fins partly converted into feet (or any other transitional characters) has ever been found.

"The chief candidate for such a transitional form was long supposed to have been the coelacanth, a crossopterygian fish, which was supposed to have certain limb-like characters on its fins indicating initial advance toward amphibianhood. Ultimately it was destined, so it was believed, to become a primitive amphibian known as a labrynthodont. The coelacanth was believed to have finished this transition sometime in the Mesozoic since no fossils have been found subsequent to that era.

"Evolutionists were embarrassed when it was discovered in 1958 that these fish are still alive and well, living in the waters near Madagascar...It is hard to see how these fish could have become amphibians when they are still the same as they were a hundred million years ago when they began to make the transition. The lung-fish, the 'walking catfish,' and other fish that seem to have certain resemblances to land animals, have all been ruled out by the evolutionists for various other reasons." [29]

The so-called "missing link" between the reptile and the bird is thought to have

been a fossil called archaeopteryx, which simply means in Greek "old bird," but doesn't it sound grand:

"Evolutionists universally maintain that reptiles are the evolutionary ancestors of birds. Again, however, there is no fossil evidence of this, despite the famous fossil archaeopteryx. W.B. Swinton has admitted:

"'The origin of birds is largely a matter of deduction. There is no fossil evidence of the stages through which the remarkable change from reptile to bird was achieved.' [30]

"The interesting fossil, archaeopteryx, however, had certain characteristics (e.g., teeth) which were deemed reptilian and others (e.g., wings and feathers) which were deemed avian. Consequently, this is always the most-emphasized example, in evolutionary text books, of evolution between two major classes of animals. If there is any transitional form at all, archaeopteryx is the one. As Dunbar says:

"'It would be difficult to find a more perfect "connecting link" between two great groups of animals, or even more cogent proof of the reptilian ancestry of the birds.' [31]

"Yet this same author, in the very same paragraph recognizes that archaeopteryx is not part reptile at all, but 100 percent bird. He says it is:

"'...because of its feathers distinctly to be classified as a bird.' [32]

"The fossilized impressions of feathers on the wings of archaeopteryx have been found and this shows that it was warm-blooded, not a reptile with scales and cold blood. [33]

So embarrassed are the evolutionists by these gaps in the fossil record between the major classes that they are turning again to the old "saltation" theory, that is that evolution proceeds by quantum jumps. In 1940 Dr. Richard Goldschmitt after twenty five years of unsuccessful efforts to breed a new species of gypsy moth, proposed his "hopeful monster" theory. Occasionally monsters are born, a sheep with two heads, etc., which usually die very quickly. But suppose, Dr. Goldschmitt suggests, that occasionally these monsters don't die, but live to breed, and so pass on their odd genes to the next generation. These creatures could possibly bridge the gap between the great classes, and since they occurred so quickly they would leave no evidence in the fossil record.

At the time this theory was completely ridiculed by his fellow evolutionists, but in 1977 Stephen Jay Gould of Harvard suggested that Goldschmitt's "hopeful monster" theory would have to be embraced to some extent, because of the gaps in the fossil record. Gould called his own version of the "hopeful monster" theory "punctuated equilibria." Species are usually in a state of equilibrium, he says, but at rare intervals thy are punctuated by a quantum jump before settling back into a new equilibrium. Gould thinks a new species could evolve in this manner in 50 to 100 generations, or less than 100,000 years for some species. This is considered practically instantaneous by orthodox geological time standards and would explain why no transitional forms have been found

in the fossil record.

Traditionally evolutionists have claimed that the reason they can't test the theory of evolution by breeding experiments, is because of the tremendous time periods involved. But this is no longer true if the punctuated equilibria theory is correct, and as Mrs. Stepan has pointed out, the fast breeding species Drosophila melanogaster, is long overdue for a quantum jump!

In conclusion let me repeat that the atheist Ernst Haeckel who coined the term "missing link," to describe the absence of transitional forms in the fossil record between the great classes, prophesied that fossils of these forms would soon be found. The fossil record has proven this prophesy false.

Dean Smalley

The meeting tonight was on the fifth day of creation which deals with the origin of fish and birds. We thought this an appropriate place to begin our discussion of the theory of evolution, which claims that birds have evolved from fish.

Dr. Schonfield presented the case for evolution from the Nobel laureate Jacques Monod who maintains that the whole stupendous edifice of evolution was brought about by an accumulation of random accidents at the molecular level called "mutations" which have occurred regularly over the millenia.

Fr. Staatz accepted the theory of evolution on its scientific merits, and claimed that Teilhard de Chardin had successfully reconciled the theory with Christian theology.

Mrs Stepan offered a rebuttal of Jacques Monod by the French Catholic mathmatician, George Salet, who compared the transition of Monod's hypothetical proto-cell to a more modern cell, to the impossible transition between a two cycle and a four cycle engine. Monod had claimed that the main argument today for evolution is from genetics, but Mrs. Stepan replied with the Polish geneticist, Maciej Giertych, who stated in some detail that genetics has no proofs for evolution.

Rev. Swezey claimed that the fossil record has shown that there are major gaps between all the great classes of Linnaeus, such as that between the reptile and mammal, thus demonstrating that the theory of evolution is false.

****

References

1 Jacques Monod, *Chance and Necessity*, translated from the French by Austryn Wainhouse, Vintage Books, Random House, New York, 1972, p.138.

2 Monod, *Op. cit*., pp.143-146.
3 Monod, pp.143,144.
4 Monod, pp.112,113.
5 Monod, pp.119,120,126,127.
6 Owen Garrigan, *Man's Intervention in Nature*, Hawthorne Books, New York, 1967,. pp.122,123
7 Garrigan, *Op. cit*., pp.83,84.
8 Garrigan, pp.85,86.
9 Garrigan, p.81.
10 Garrigan, pp.87,89.
11 Robert Faricy, S.J., *Teilhard de Chardin's Theology of the Christian in the World*, Sheed and Ward, New York, 1967, p.36.
12 George Salet, *Hasard et Certitude*, translated from the French by Bro. Stanislaus Ribera Faig, O.S.B., *Editions Scientifique*, Paris, 1972, pp.273,274.
13 Salet, *Op. cit*., p.274.
14 Salet, pp.279,280.
15 Salet, pp.389-391.
16 Gerard J. Keane, *Creation Rediscovered*, Foreward: Maciej Giertych, Credis Pty Ltd, P.O. Box 451, Doncaster Vic 3108, Australia, 1991, pp.2,3.
17 Giertych, *Op. cit*., p.3.
18 Giertych, pp.3,4.
19 Monod, *Op. cit*., pp.31,32.
20 "Biology, Living Mechanics, and the Problem of the Soul, to Finish with Monod," *The Catholic Counter-Reformation in the XXth Century*, editor P. Georges de Nantes, English edition, Morden, Surrey (England), November, 1981, Number 140, p.11.

21 Hilaire Belloc, *A Companion to Mr. Well's "Outline of History,"* Sheed and Ward, London, 1926, pp.54,55.
22 Patrick O'Connell, *Science of Today and the Problems of Genesis*, Christian Book Club of America, Hawthorne, CA, 1959, p.52.
23 Cardinal Ernesto Ruffini, *The Theory of Evolution Judged by Reason and Faith*, translated from the Italian by Francis O'Hanlon, Joseph F. Wagner, New York, 1959, pp.196,197,190.
24 Pope Pius XII, *Humani Generis*, Weston College, Weston, MA, 1951, p.7.
25 Review by Theodore Roszak of Jacques Monod, *Chance and Necessity*, *Book World*, Oct 24, 1971, New York, pp.4,16.
26 Arthur Koestler, *The Ghost in the Machine*, Macmillan Company, New York, 1968,. p.127
27 Koestler, *Op. cit*., pp.128,129.
28 Koestler, p.129.
29 Henry Morris, *Scientific Creationism*, Creation-Life Publishers, San Diego, CA,. 1974, pp.82,83
30 Morris, *Op. cit*., footnote, p.84, W.E. Swinton, *Biology and Comparative Physiology*. *of Birds*, New York, Academic Press, 1960
31 Morris, footnote, p.85, Carl O. Dunbar, *Historical Geology*, John Wiley and Sons, New York, 1961.
32 Morris, footnote, p.84, Dunbar, *Op. cit.*

33 Morris, pp.84,85.

****

THE SIXTH DAY

The Origin of Man

THE NINTH MEETING

The Evolution of Man

Dean Smalley

We come tonight to the sixth day of creation which deals with the origin of man. We have decided to devote three meetings to this most important day; the first to a discussion of the evolution of man, the second to the future evolution of man, during which we will examine the ethical problems associated with recombinant DNA research and genetic engineering or eugenics, and our final meeting to the existence of the soul. Let me begin as usual by reading the Scriptural account of the sixth day of creation:

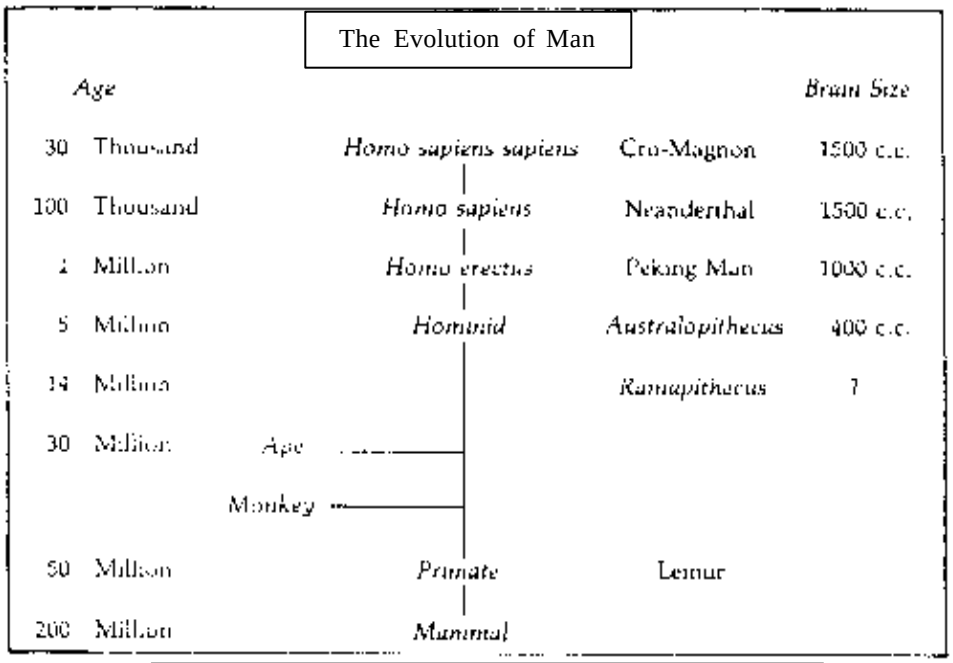
And God said, "Let the earth bring forth living creatures according to their kinds; cattle and creeping things and beasts of the earth according to their kinds." And it was so. And God made the beasts of the earth according to their kinds, and everything that creeps upon the ground according to its kind. And God saw that it was good. Then God said, "Let us make man in our image, and after our likeness; and let him have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth." So God created man in his image, in the image of God he created him; male and female he created them. And God blessed them, and God said to them, "Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth." And God said, "Behold, I have given you every plant yielding seed which is upon the face of all the earth, and every tree with seed in its fruit; you shall have them for food. And to every beast of the earth, and to everything that he made, and behold, it was very good. And there was evening and there was morning a sixth day (Gen 1:24-31).

Dr. Arthur Schonfield

The diagram on the board is the big picture of the ascent on man according to Jacob Bronowski. Many scientists, however, would differ with him in a few details. Man belongs to the mammal class which is thought to have evolved from the reptile about 200 million years ago. Man also belongs to the order of primates, in which monkeys, apes and men are classified as higher primates, while the lemur is classified as a lower primate. The lemur looks and acts very much like a monkey, but the reason it is not so classified is mainly because of its teeth. Monkeys, apes and men have thirty-two teeth, while the lemur has many more.

In 1859 Charles Darwin published his *Origin of Species* in which he dealt only with evolution in general; but in 1871, in his *Descent of Man*, he asserted that man had

evolved from the anthropoid or man-like apes. Most likely, he said, this had occurred in Africa, because two of the remaining species of anthropoid apes, the gorilla and the chimpanzee, were still found there; but also possibly in Asia, where the orangutan and the gibbon, the other two remaining species were found. But in the 1950's Sir Julien Huxley and Louis Leakey decided that it was more proper to say that the apes, instead of being our parents, were rather our cousins, and that our common ancestor was one of the lower primates like the lemur.



The Ascent of Man according to

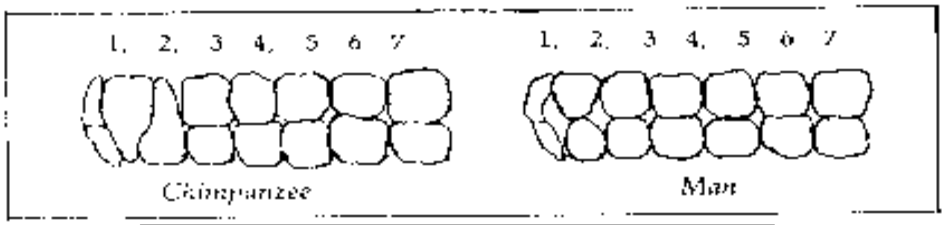
The lower primates are thought to have appeared about 50 million years ago, and from that line the monkeys branched off about 20 million years later. The reason that monkeys are considered more primitive than apes is again primarily because of their teeth. Although monkeys do have the thirty-two teeth of apes and men, their back teeth (the molars) have only four cusps (little bumps), while apes and men have five.

Next, the apes branched off from the main line and the hominids or near-men appeared, but just when the apes and the hominids became distinct is not yet clear. Here is Dr. Bronowski:

"It is the change in the teeth that signals the separation of the line that leads to man when it comes. The first harbinger that we have is Ramapithecus, found in Kenya and India. This creature is fourteen million years old, and we have only pieces of the jaw. But it is clear that the teeth are level and more human. The great canines of the anthropoid apes are gone, the face is much flatter and we are evidently near a branching of the evolutionary tree; some anthropologists would boldly put Ramapithecus among the hominids." [1]

The first generally accepted hominids, however, are the Australopithecines, southern apes, which were discovered by Raymond Dart and others, in southern Africa. Some scientists however, think that the Australopithecines were not in the direct line to man, but rather a collateral branch which came to an end. There are, of course, no hominids living today.

Again the main reason the Australopithecines are considered hominids, and not apes, is their teeth. The diagram is a side view of the thirty-two teeth of chimpanzees and men. We both have 1), eight incissors, 2), four canines, 3) 4), eight pre-molars, and 5) 6) 7), twelve molars. Notice in the chimpanzee that the canines are huge, and that they lock together. Man has the same set of molars, pre-molars, canines, and incisors, but the canines are smaller and do not lock together. The canines of the Australopithecines are more like those of man than those of the chimpanzee.



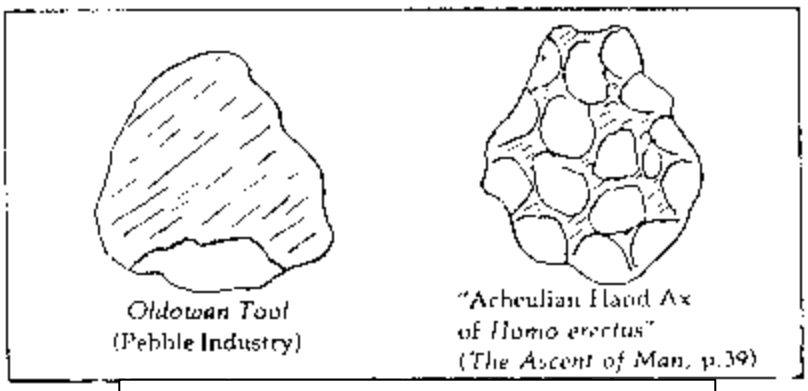
Teeth of Chimpanzee and Man

In the television version of *The Ascent of Man*, Dr. Bronowski was seated before the display screen of a computer. He had programmed into the computer, drawings of about six fossil skulls representing the evolutionary steps from the lower primates to man. As he spoke, one drawing faded imperceptibly into another:

"...He is the nearest thing we have to what used to be called the 'missing link': *Australopithecus africanus*, one of a number of skulls found at Sterkfontein in the Transvaal and elsewhere in Africa, a fully grown female...fully erect, walking, and with a largish brain weighing about a pound-and-a-half. That is the size of the brain of a big ape

now; but of course this was a small creature standing only four feet high. Indeed recent finds by Richard Leakey suggest that by two million years ago the brain was larger even than that.

"...Two million years ago Australopithecus made rudimentary stone tools where a simple blow has put an edge on the pebble. And for the next million years, man in his further evolution did not change this type of tool. He made the fundamental invention, the purposeful act which prepares and stores a pebble for later use. By that lunge of skill and foresight, a symbolic act of discovery of the future, he had released the brake which the environment imposes on all other creatures. The steady use of the same tool for so long shows the strength of the invention. It was held in a power grip. (The ancestors of man had a short thumb, and therefore could not manipulate very delicately, but could use the power-grip.) And of course, it is a meat-eaters tool almost certainly, to strike and cut." [2]



Oldowan and Acheulian Tools

The point at which the hominids, the near-men, became *homos*, or men, is a disputed one among scientists. Louis Leakey, for example, defined man as a tool-using animal. He had discovered in the Oldowan Gorge the simple tools which Dr. Bronowski described, called the "pebble industry" or Oldowan tools. He called the Australopithecine who used them, *Homo habilis*, handy man or tool man. Other scientists, however, Bronowski included, want to keep the hominid classification of Australopithecus and call *Homo erectus*, erect man, the first true man. *Homo erectus* used more sophisticated tools some of which are called Acheulian tools, named for the town of St. Acheuil in France, where they were first found. *Homo habilis* hunted only small game like rodents, while *Homo erectus* hunted much larger game. He must have hunted in small cooperative groups, which would have required some kind of rudimentary language. The group of scientists who want to make *Homo erectus* the first true man would define man as a language-using animal.

"At what point can we say that the precursors of man became man himself? That is a delicate question, because such changes do not take place overnight. It would be foolish to try and make them seem more sudden than they really were - to fix the

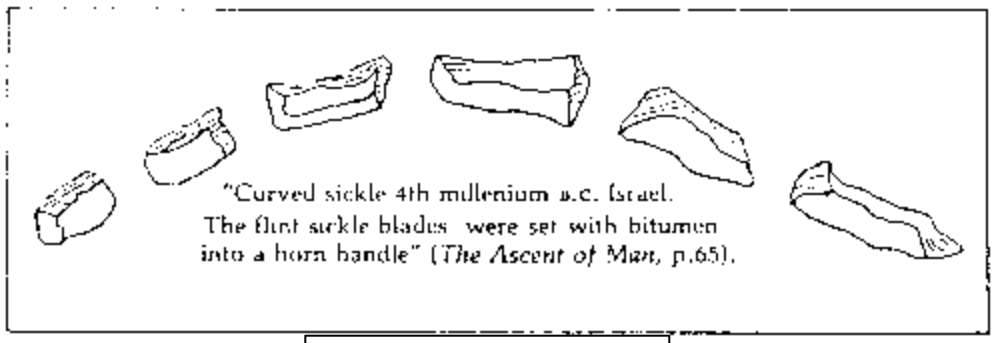
transition too sharply or to argue about names...Two million years ago we were not yet men. One million years ago we were, because by one million years ago a creature appeared who can be called *Homo* - *Homo erectus*. He spreads far beyond Africa. The classical find of *Homo erectus* was in fact made in China. He is Peking Man, about four hundred thousand years old, and he is the first creature that certainly used fire.

"The changes in *Homo erectus* that have led to us are substantial over a million years, but they seem gradual by comparison with those that went before. The successor that we know best was first found in Germany in the last century: another classic fossil skull; he is Neandertal Man. He already has a three-pound brain, as large as modern man. Probably some lines of Neandertal Man died out; but it seems likely that a line in the Middle East went on directly to us, *Homo sapiens*." [3]

Once again some scientists would disagree with Dr. Bronowski here, maintaining that Neandertal Man is not on the main line of evolution to modern man, but another collateral line that came to a dead end. Bronowski then concentrates on the most important step in our evolution, the emergence of language.

"...A slow creature like man can stalk, pursue and corner a large savannah animal that is adapted for flight only by cooperation. Hunting requires conscious planning and organization by means of language as well as special weapons. Indeed, language as we use it has something of the character of a hunting plan, in that (unlike the animals) we instruct one another in sentences which are put together from moveable units. The hunt is a communal undertaking of which the climax, but only the climax, is the kill." [4]

Dr. Bronowski concluded his presentation of the evolution of man with the discovery of agriculture. In the television version of *The Ascent of Man*, he was speaking from Jericho, one of the oldest cities in the world:



Natufian Sickle

"Jericho is older than agriculture. The first people who came here and settled by the spring in this otherwise desolate ground were people who harvested wheat. We know

this because they made tools for the wild harvest, and that is an extraordinary piece of foresight. They made sickles out of flint which have survived; John Garstang found them when he was digging here in the 1930's. The ancient sickle would have been set in a piece of gazelle horn or bone...

"Farming and husbandry seem simple pursuits, but the Natufian sickle is a signal to show us that they do not stand still. Every stage in the domestication of plant and animal life requires inventions, which began as technical devices and from which flow scientific principles. The basic devices of the nimble-fingered mind lie about, unregarded in any village anywhere in the world. Their cornucopia of small and subtle artifices is ingenious, and in a deep sense as important in the ascent of man as any apparatus of nuclear physics: the needle, the awl, the pot, the brazier, the spade, the nail, and the screw, the bellows, the string, the knot, the loom, the harness, the hook, the button, the shoe - one could name a hundred and not stop for breath. The richness comes from the interplay of inventions; a culture is a multiplier of ideas, in which each new device quickens and enlarges the power of the rest." [5]

Man's evolution then became cultural, rather than biological, and he could be considered truly civilized with the founding of the first agricultural villages, which eventually became cities.

Fr. Robert A. Staatz

I would like to read tonight from Fr. Owen Garrigan's analysis of the effects of the theory of the evolution of man on both the biblical story of Adam and Eve, and on the Church's teaching concerning original sin. This is again from his excellent *Man's Intervention in Nature:*

"The interpretation placed upon Adam and original sin in the conceptual framework of an evolving cosmos (a framework long unfamiliar to theologians) gives rise to some new departures in theological speculation. In Christian tradition, the Adam of Genesis has been understood as an individual, the progenitor of the entire human race. The monogenistc interpretation was reinforced from the earliest centuries by St. Paul's reference (Romans 5) to Christ as the 'second Adam'...

"This view was endorsed by Pope Pius XII as late as 1950. Since then, however, an attempt has been underway to disengage the basic religious message intended by the inspired writer from its manner of expression. The new approach tries to separate as far as possible the biological question of polygenism from the theological question of original sin. [Polygenism is a Greek word meaning many pairs of first parents, and it is opposed to monogenism, one pair of first parents.]

"In some respects this new understanding of Scripture is difficult to reconcile with traditional teaching. But, at least for the present, these tentative proposals seem to fit more harmoniously into a world-view that takes evolution into account. (Polygenism seems to be biologically probable to provide a wide breeding base for the evolving

human species. Moreover, the simultaneous occurrence of the critical ‘humanizing’ mutation in both male and female individuals to produce the original pair seems highly improbable.) “ [6]

The "humanizing" mutation which Garrigan speaks of is usually thought of as an increase in brain size. But whether this occurred sometime in the transition from Australopithecus (500 c.c.) to *Homo erectus* (1000 c.c.), or from Homo erectus to Neandertal Man (1500 c.c.), scientists frankly admit they don't know. But it is highly unlikely that such a mutation would have occurred simultaneously in both a male and a female.

“Two lines of reinterpretation have issued from the vigorous biblical renaissance of our day:

“1) Scripture scholars have suggested that ‘Adam’ (literally, ‘the man’) was used by the author of Genesis and other Old Testament writers to designate a corporate personality in the sense of the medieval ‘everyman.’ We can, indeed, see ourselves in the actions and reactions of Adam. The Adam encountered in the Hebrew Scriptures, therefore, was not a specific individual in the intention of the sacred writers. It is also quite conceivable that St. Paul was not pronouncing on the question of the biological unity of the human species when he spoke of the ‘second Adam.’ It seems, in fact, most probable that the question never occurred to him. Just as Christ's reference to the sign of Jonah in the belly of the whale, does not guarantee the physical presence of Jonah in the belly of the whale, so St. Paul's reference to Christ as the second Adam does not guarantee physical monogenism.

“2) Scriptural exegetes have recently given some prominence to the concept, quite general in biblical texts, of ‘sin of the world.’’ The sacred authors were so keenly aware of the universality of sin and of their own sinfulness that they formulated the story of everyman's fall. For them, the ‘sin of Adam’ was a disordered will common to all those who share the human condition. It is the result of the free choice of man, but it is not restricted to one man's choice on a single occasion. In this view, the state of original sin in man depends on the condition of being human linking him to all mankind, rather than on the physical acts of generation linking him to a primal sinner.” [7]

These ideas on original sin are those of Teilhard de Chardin which, we have seen, were unacceptable to the Church of the twenties, and were responsible for his exile to China; but they are much more acceptable to the more mature Church of today.

“It seems unlikely (although possible) that these newer speculations will be found irreconcilable with traditional theology. Authoritative teaching has not definitely excluded this type of explanation. More profound than the question of monogenism, and fundamental to it, is the question of the unity of the human race and our solidarity with the incarnate Word of God. It may be asked whether this unity and solidarity are founded on consanguinity and monogenism. There are really two questions here. First is monogenism whereby all men are related by blood and by a series of generative acts to

each other and to Christ, of a priori necessity for the unity of mankind and for the solidarity of each man with the Redeemer? Second, is this monogenism in fact a basis chosen by God for human unity and solidarity in Christ? If this was his providential arrangement, then revelation may contain God's witness to the existence of *de facto* monogenism.

"The answer to the first question seems to be 'no.' It was only before men understood our isolation together on this tiny island floating in uncharted oceans of space and time that they thought that blood would make us closer brothers. The unity of the human race does not require as a sine qua non condition physical descent from a single pair. Nor does our solidarity with Christ depend of necessity on our common blood descent. Although the origin of all men from Adam is a persuasive argument against racial prejudice in our day, there does not seem to be any compelling reason to conclude that polygenism is theoretically impossible, or that the human race would be less united if it descended from an evolving group rather than from a single pair." [8]

Let me go on to Teilhard de Chardin and the important role he played in the development of the theory of the evolution of man. As many of you know, Teilhard was personally involved in two of the famous so-called "missing links": Piltdown Man, which later turned out to be a clever forgery, and Peking Man, now classified as a Homo erectus. Let me begin with Teilhard's involvement with Piltdown Man. Teilhard was only recently ordained when he became acquainted with the amateur English fossil hunter, Charles Dawson, the discoverer of the first Piltdown fossils. It was not until forty years later that it was found that the skull of a man and the jaw of an orangutan, cleverly doctored, had been planted at Piltdown by a forger or forgers, whose identity, in spite of many ingenious theories, is still a mystery. A few scientists have even suspected that Teilhard himself was somehow involved in the hoax.

Teilhard had discovered an elephant's molar (*Elephas planifrons*), and later a canine belonging to the jaw of Piltdown Man. The main reason he seems to be a suspect in the forgery is that the elephant's molar on examination turned out to be highly radiocative. The only place where such radioactive fossils are found is Tunisia, which Teilhard had visited shortly before he came to Piltdown. Let me read a few excerpts from an excellent book on the Piltdown forgery which reads like a detective story - *The Piltdown Men* by Ronald Millar:

The other successful searcher at Piltdown was Père Teilhard de Chardin. The evidence against the priest is as black, if not blacker, than that against Dawson. One has merely to recall the incredulity of Dawson and Woodward when Teilhard de Chardin discovered the missing canine tooth in a stretch of gravel which had just been thoroughly searched. Oakley's discovery in connection with the *Elephas planifrons* is highly significant in this case. Before his arrival at Ore Place, Hastings the student-priest had actually stayed near Ishkul, Tunisia...

"Sir Wilfrid Le Gros Clark told me that because of the Tunisian association he at one time strongly suspected Teilhard de Chardin. Oakley agreed, but like Le Gros Clark,

he feels that not only the lack of the requisite anatomical knowledge but the whole nature of the man must exonerate him.

"The discovery that Piltdown Man was a deception deeply hurt Teilhard de Chardin. According to Oakley he took the news harder than Sir Arthur Keith. He miserably told Oakley that throughout the vicissitudes of his life his main consolation was that he had helped to discover Piltdown Man. Teilhard might have been putting on an act but he did in fact arrive in England too late to have 'planted' the original find in 1908. It is just possible however, that he might have added the *Elephas planifrons* molar to gain some kudos. That he likewise planted the controversial canine is highly doubtful." [9]

It has recently come to light that a nephew of Charles Dawson, who was in the British army, was stationed near Tunisia. This man was also an avid amateur fossil hunter and habitually sent his finds home to his uncle. Was this possibly the source of the radioactive *Elephas Planifrons*? Here is Teilhard's own reaction to the exposure of the hoax as told by his biographer, Robert Speaight:

"...Returning from his last days in the field was crossed with an embarrassing reminder of the first, when the forgery of Piltdown Man was finally attested. He was invited to give his views in an article, but he preferred to make no public statement. Dawson had died during the first World War, and Teilhard had too fond a memory of their excavations to believe in his bad faith. In answer to a letter from Kenneth Oakley announcing the exposure, he replied:

""No one would think of suspecting Smith-Woodward. I knew pretty well Dawson - a methodical and enthusiastic character. When we were in the field I never noticed anything suspicious in his behavior. The only thing which puzzled me, one day, was when I saw him picking two large fragments of skull out of a sort of rubble in the corner of the pit (these fragments had probably been rejected by the workmen the year before). I was not in Piltdown when the jaw was found. But a year later when I found the canine, it was so inconspicuous among the gravels which had been spread on the ground for sifting that it seems to me quite unlikely that the tooth would have been planted. I can even remember Sir Arthur congratulating me on the sharpness of my eyesight.

"'Don't forget: the pit at Piltdown was a perfect dumping place for the farm and cottages. It was flooded in winter, and water in the wealden clay can stain at a remarkable speed. In 1912, in a stream near Hastings, I was unpleasantly surprised to see a fresh-sawed bone (from the butcher's) stained almost as deep brown as the human remains from Piltdown. Had a collector possessing some ape bones thrown his discarded specimens into the pit? The idea sounds fantastic; but in my opinion, no more fantastic than to make Dawson the perpetrator of a hoax.'" [10]

The idea that a man like Teilhard could in any way be involved in a hoax, is too ridiculous to take seriously. Teilhard is also associated with the discovery of the famous Peking Man (*Sinanthropus*), now classified as a *Homo erectus*. Let me conclude by

reading Robert Speaight's account of the tragic death of Davidson Black, the discoverer of Peking Man, who was Teilhard's very close friend:

"...Teilhard broke the news in a letter to Breuil:

"'His heart had been giving him trouble for some time, and five weeks ago we had a warning of what might happen. We were hoping that he was pulling round, but the end came suddenly. Black was feeling better (or seemed to be); he had just been talking briskly with some friends and was full of plans, as usual. A moment later he was found dead, by this table, in this lab you know so well, between *Sinanthropus* and the skull from the Upper Cave.'

"The loss put Teilhard's faith to a severe trial; in the same letter he goes on:

"'But what an absurd thing life is, looked at superficially; so absurd that you feel yourself forced back on a stubborn desperate faith in the reality and survival of the spirit. Otherwise - were there no such thing as spirit, I mean - we should have to be idiots not to call off the whole human effort.'

"Some critics have gone so far as to assert that Teilhard had lost his faith in personal immortality. To such a calumny these lines are a sufficient answer. Nevertheless, the death of Davidson Black was 'like a shadow continually overhanging me.' Teilhard had loved him 'almost more than a brother,' and he was not comforted by 'the stifling atmosphere of agnostic condolences.' He concluded in a letter to the Bégouêns with a resolution wholly in keeping with his character:

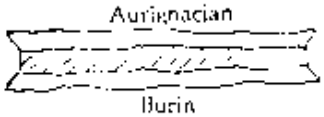
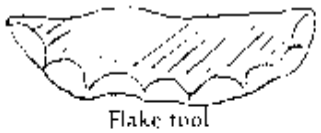
"'I swore to myself, on the body of my dead friend, to fight more vigorously than ever to give hope to man's work and inquiry.'" [11]

In conclusion, let me say again, that any interpretation of Holy Scripture which contradicts an established fact of science, cannot be a true interpretation. There is only one truth. The older monogenistic basis of the doctrine of original sin contradicts the established scientific fact of the evolution of man, which, as we have seen, is based on polygenism. This demands a reformulation of the Church's teaching on original sin.

Mrs. Maria Stepan

I would like to begin my presentation tonight with a few comments on Dr. Bronowski's review of the theory of the evolution of man. On the board I have a simplified outline of what is called the "cultural evolution" of man, and the so-called "industries" associated with each stage in that evolution. We are supposed to have evolved from food-gatherers, to hunter-gatherers, to higher hunters, and finally to have reached the agricultural stage. You supposedly can identify the cultural stage by the industry that is found at a particular site.

It is said that it all began around 2,000,000 years ago or earlier with the Australopithecines, who were originally food-gatherers. They moved about continually foraging for food like fruit, just as monkeys and apes do today. The Australopithecines had only recently come down from the trees, and were beginning to venture out into the open savannah, however, because they had small fighting canines, they returned to the

Cultural Evolution		*Industries*
5000 B.C.	*Agriculture*	*Neolithic* Polished stone Friction
40,000	*Higher Hunter* Cro-Magnon	*Paleolithic* Aurignacian  Burin
100,000	Neanderthal	Mousterian  Flake tool Precision-grip
400,000	*Hunter-Gatherer* *Homo erectus*	Acheulian Pressure flaking
1,000,000	*Homo habilis*	Oldowan Percussion flaking Power-grip
7,000,000	*Food-Gatherer* *Australopithecus*	

forest at night.

Cultural Evolution	Industries

Then around 1,000,000 B.C. came what Louis Leakey called *Homo habilis*, Tool Man. The Australopithecines, Leakey claimed, discovered how to make small tools which he named Oldowan tools, from the gorge where they were first found. Some scientists have actually attempted to make these tools themselves to see how our alleged ancestors did it. One explanation is that the Oldowan tools were made by a method called percussion flaking, that is, the stone was struck a couple of times by another stone, knocking off a few flakes and leaving a sharp ragged edge. These were all-purpose tools used for killing and butchering small game. They were held in a power-grip, that is, with the whole hand, as one holds a hammer, supposedly because *Homo habilis* had a short thumb and therefore limited manipulative ability. Let me add in passing - Louis Leakey claimed that in a gorge in California, similar to the Oldowan gorge, some of his disciples had discovered hundreds of Oldowan type tools. These "tools" were rejected almost unanimously by American evolutionists, who insisted they were the accidental results of purely natural processes.

Next came *Homo erectus* around 400,000 B.C., and one industry called Acheulian. This kind of tool is thought to be made by a method called pressure flaking, in which a bone or piece of wood is used as a chisel, giving a greater control of the flaking process so that a sharp edge could be made around the whole stone. The Acheulian tool was also held in the power-grip and used for killing and butchering animals. Both the Oldowan and Acheulian tools are said to belong to the Lower Paleolithic, or early Old Stone Age.

Next we come to the Upper Paleolithic, the late Old Stone Age, to Neandertal and Cro-Magnon Man. These men who lived during the Ice Ages are sometimes called Higher Hunters, which means that they could tackle wooly mammoths, sabre tooth cats, bears, etc. One of Neandertal Man's industries is called Mousterian, again named for a town in France, and included a whole kit of tools for various specialized purposes. The particular tool in the diagram is called a backed knife, and its significance is that it is held with a precision-grip, as one holds a pen with the thumb and fingers. Man's digital abilities had supposedly evolved from the simple power-grip. The backed knife is thought to have been used for making clothes out of skins.

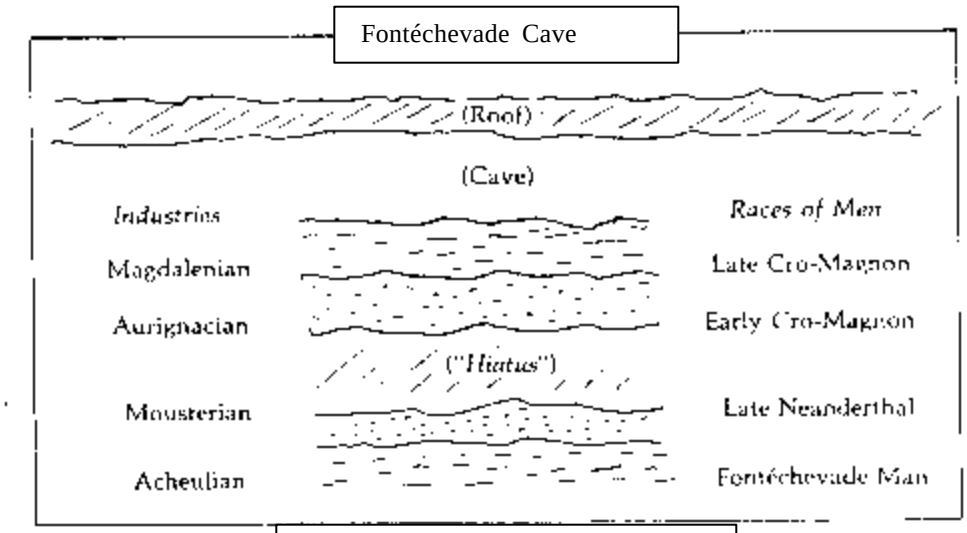
Neandertal Man is dated around 100,000 B.C., and was followed by Cro-Magnon Man who is supposed to have appeared around 40,000 B.C. One of Cro-Magnon's industries is called Aurignacian, and the tool in the diagram is called a burin. It was sharp on both sides and on both ends, which means that it could be used either as a knife or a chisel. The significance of the tool is that could be used in engraving. Cro-Magnon Man was a great artist, and made beautiful engravings on the tusks of mammoths and on the antlers of reindeer. He also did the wonderful cave paintings at Altimira in Spain.

The next stage in cultural evolution is supposed to be the discovery of agriculture and the domestication of animals. This is called the Neolithic or New Stone Age, and Neolithic tools are said to be made by friction and are polished. From the Neolithic Age, man went on to the various Metal Ages, first the Copper, then the Bronze, and finally the

Iron Age. Neolithic Man first began to live in small villages, and by the Iron Age he was living in large cities, and could finally be considered truly civilized.

With that little background, let me read from Fr. Patrick O'Connell, one of the very few Catholic writers to attack the evolution of man. This is from his *Science of Today and the Problems of Genesis* which first came out in 1959, so it is a little dated, but let me first explain some of the terms Fr. O'Connell will be using.

We see from the illustration that the Magdalenian industry was late Cro-Magnon, and the Aurignacian early Cro-Magnon. The so-called "*Hiatus*" is a complete gap in the fossil record between early Cro-Magnon and late Neandertal Man. In my first chart I gave the commonly supposed dates of 100,000 B.C. for Neandertal, and around 40,000 B.C. for Cro-Magnon. This *Hiatus* has been completely unexplained by the evolutionists, but some Christian writers, Fr. O'Connell included, have suggested that it could have been caused by the Noachian Deluge. The Mousterian industry was late Neandertal, and the Acheulian industry, according to Dr. Bronowski, was supposed to belong to *Homo erectus*.



The Fontéchevade Cave

"The actual cave where fossils were found had been known for a long time. In it there was the routine stratified sequence of Magdalenian flints on top, Aurignacian (the period after the Hiatus) next, then the sterile layer of clay without fossils or artifacts that was deposited by the Flood and marked the abandonment of the settlement, and finally the Mousterian flints beneath it. Underneath these four strata was what appeared to be a limestone floor.

"In 1937 Mlle. Henri-Martin discovered that this was not a floor at all but a layer of limestone that had fallen from the roof of the cave before the Neandertal Man

occupied it. When this layer was removed, no less than twenty feet of debris were found beneath it which contained the fossil remains of animals of warm climates and stone instruments of the Lower Paleolithic Age and two human skulls. These latter were not found until 1947.

"In *Les Hommes Fossiles*...Valois says: 'The fact that the stalagmite floor which covered these deposits was found to be intact, guarantees the absolute authenticity of what was found beneath them.' The fluorine test (which was applied in 1951) confirms the authenticity of the fossils...which have a brain capacity of about 1450 c.c...

"The Fontéchevade cave is the best example of a stratified cave we have in Europe. It shows the fossils of artifacts of the various families or races in the order in which they came to Europe. The earliest (i.e. those of Fontéchevade Man) resembled modern man very closely; next came the Neandertal Man, with his marked peculiarities; above him was the flood deposit of earth, probably laid down by the Deluge, containing neither fossils or artifacts; above that was the post-hiatus Aurignacian stratum, and finally the stratum of the Magdalenian hunter who brought the Old Stone Age to a close." [12]

So below Neandertal Man we find the tools of the Lower Paleolithic, in other words, Acheulian type tools supposedly used by *Homo erectus*, but modern type skulls of about 1450 c.c., exactly the average for man today. We have just seen a sketch of an Acheulian hand ax copied from a photograph in *The Ascent of Man*, and have heard Dr. Bronowski maintain that it was made by *Homo erectus* who had a brain capacity of 1000 c.c. No wonder the evolutionists try to ignore Fontéchevade!

Fr. O'Connell is also very critical of the theory of cultural evolution - how we are supposed to have evolved from food-gatherers, to hunter-gatherers, to higher hunters, and finally to agriculture, and how each stage in this evolution can be determined by its associated "industries."

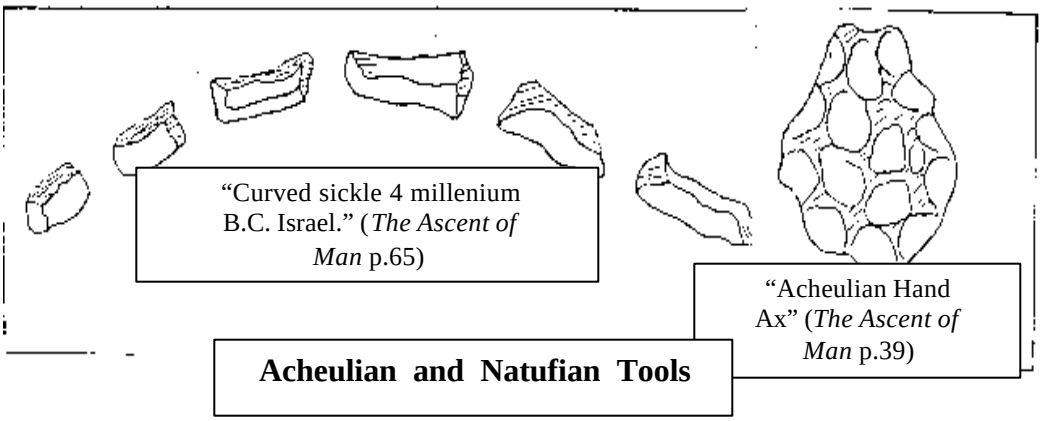
"The fossils and artifacts of a race to which the name Natufian has been given were discovered in the vicinity of both Carmel and Bethlehem. Between 1928 and 1931, Miss Garrod of the American party unearthed the fossil remains of forty-five individuals in the cave of Shukbah, and eighty-seven in the cave of Mugharet-el-Wad in the vicinity of Carmel; and in 1931 M. Neuville of the French party found the fossils of six or seven individuals at Erq el Ahmar to the south of Bethlehem.

"Instead of the stone instruments used by the nomadic hunters...these had stone instruments suited to agriculture and domestic purposes. These stone instruments were not polished like the Neolithic instruments...The Natufians were rather small of stature; they cannot be identified with any living race, but in general they resembled the Fontéchevade Man. They practiced agriculture and kept domestic animals. Their stone instruments resembled those dug up in the lower strata of the city of Jericho...

"When those writers who are evolutionists hear of agricultural instruments being found at any ancient site, they conclude immediately that they belong to the Neolithic

Age. For instance, W.F. Albright in From the Stone Age to Christianity states: 'The true Neolithic was first discovered by L. Garstang in his excavation of the lowest occupied levels of Jericho in 1935-36.' Now, the Neolithic stone instruments are made by friction and are therefore polished. The stone instruments found in the lower strata of Jericho were made in the same manner as those of the Old Stone Age, i.e. by flaking and were not polished. Garstang, who was not an authority on the instruments of the Old Stone Age, refers to them as Neolithic, but in the photographs he gives of them in *The Story of Jericho*...they look like the instruments of the Old Stone Age." [13]

I have copied this Acheulian hand ax from a photograph in Dr. Bronowski's *The Ascent of Man.* He dates it at 400,000 B.C., and claims that it was made by *Homo erectus*, who is supposed to have had a brain capacity of around 1000 c.c. He dates the sickle which I have also copied from his book, at around 4000 B.C., and says that it was made by the Natufians, who had a brain capacity of about 1450 B.C. It seems obvious that both the sickle and the hand ax were made in the same way by pressure flaking, yet the hand ax is considered Lower Paleolithic, early Old Stone Age, and the sickle Neolithic, New Stone Age, to fit the requirements of the theory of cultural evolution. Neolithic tools, unlike this sickle, are thought to be made by friction and to be polished. Fr. O'Connell thinks that it is not reasonable, based on the evidence available, to maintain that men slowly evolved from food-gatherers, to hunter-gatherers, to higher hunters, and finally to the agricultural stage. It seems much more reasonable to maintain that the man who made the hand ax, and the man who made the sickle were contemporaries. One man, or family or tribe, chose the nomadic life of the hunter, while the other chose the more settled life of the small agricultural village.



Acheulian and Natufian Tools

Let me now go on to Fr. Teilhard de Chardin and his close connection with the development of the theory of the evolution of man. I would like to make just a brief comment on the infamous Piltdown Man. This so-called fossil was not exposed as a hoax

until after having been accepted by the evolutionary establishment for over 40 years. Yet a simple reading of the facts presented in the journals of the time should have alerted any scientist of good will that there was something drastically wrong. Let me read just the conclusion of one such examination by Fr. George O'Toole, a professor of philosophy and biology at St. Vincent Archabbey and Seton Hall, from his excellent *The Case Against Evolution* which came out in 1925:

"To conclude, therefore, the *Eoanthropus Dawsoni* ["Dawn Man of Dawson"] is an invention, and not a discovery, an artistic creation, not a specimen. Anyone can combine a simian mandible with a human cranium, and, if the discovery of a connecting link entails no more than this, there is no reason why the evidence for human evolution should not be turned out wholesale." [14]

But I would like to skip Fr. Teilhard's association with Piltdown Man, since the evolutionists themselves have finally admitted that this was a hoax, and concentrate instead on Peking Man, which the evolutionists still claim as a "missing link," but which Fr. Patrick O'Connell thinks is also, most probably, another case of fraud. Like Fr. O'Toole, Fr. O'Connell reaches this conclusion from a simple reading of the facts in the case available to any scientist who would care to peruse them. Fr. O'Connell spent over twenty years in China as a missionary, and had a great love for the Chinese people and a familiarity with their culture. For example in rural areas the Chinese still burn limestone in kilns to make lime for use in building their homes. Fr. Teilhard, on the other hand, who also spent twenty years in China, never learned to speak Chinese (Fr. O'Connell seems especially indignant by the fact that "he could not even write his name in Chinese") and never made a single Chinese convert to the Church!

Fr. O'Connell's interpretation of Peking Man is based primarily on articles written on the subject by two famous authorities, themselves evolutionists, Abbé Breuil, an expert on the industries of the Old Stone Age, and Marcellin Boule, an expert on fossil skulls, to the study of which Fr. O'Connell brings a special insight because of his long familiarity with the Chinese people and their customs. Fr. Teilhard and his friends spent most of their time in a little European enclave in Peking, and seldom went to Chou-kou-tien, the site of the dig. However, Fr. O'Connell's full treatment of Peking Man in *Science of Today and the Problems of Genesis* is much too long to give here, so I will read a brief summary from his excellent little pamphlet *Original Sin in the Light of Present-Day Science:*

"...Dr. Davidson Black, an American surgeon, in 1926 obtained a yearly grant of $20,000 from the Rockefeller Institute for the purpose of carrying out excavations at a place called Chou-kou-tien, thirty seven miles from Peking ...The excavations consisted in removing thousands of tons of limestone which had fallen down from a limestone hill in a landslide that occurred thousands of years ago. When a portion of the fallen limestone had been removed, beneath it were discovered; 1) an enormous heap of ashes, 2) thousands of dressed stones which had been brought from a distance, presumably for the constructing lime-kilns to burn limestone [This is the opinion of Abbé Breuil.], and 3) a number of fossil skulls of monkeys, because fossil skulls of monkeys were found in

abundance in the district [The opinion of Boule.]. Dr. Black selected one of the skulls found in the ashes to represent Peking Man. Fr. Teilhard de Chardin, in an article in the *Revues des Questions Scientifique*, Paris, 1930, says that when the skull was found 'the whole cerebral part was admirably preserved,' but when Dr. Black exhibited the skull, the brain-case had been removed. Fr. Teilhard de Chardin invited his former professor, the famous Marcellin Boule, an evolutionist, but one of the world's greatest authorities on fossil skulls to come out to China. [He also invited Abbé Breuil.] Professor Boule came out to China but when he saw that the only proof which was produced was a battered monkey's skull, he was very angry. He denounced Fr. De Chardin and poured ridicule on the claim that the creatures to which the battered skulls belonged could have carried on the large scale lime-burning industry which the excavations revealed. Professor Boule contended that the industry was evidently the work of real men...One day Dr. Pei [The Chinese scientist in charge at the site.] brought in the fossil remains of ten real men, among which were three complete skulls. Fr. Teilhard [in an article published in the *Revue des Questions Scientifique.*]...attempted to show that the real men whose fossils had been found had nothing to do with the industry...

"On the morning of the discovery of the fossils of real men, Dr. Black went into the laboratory to examine them, but was found later on, lying dead among them...Fr. Teilhard de Chardin wrote a new article, which he published in *Etudes*. In the article he denied what he had published in the *Revues des Questions Scientifique*, that the fossils of real men had been found, and said three more fossils of Peking Man, like the former had been found. After a lapse of five years Dr. Weidenreich [who had been appointed by the Rockefeller Institute to succeed Dr. Black] published the true account, that fossils of real men had been found." [15]

So Fr. Teilhard seems to have changed his mind several times on just what was and was not found at Chou-kou-tien. He also completely ignores the opinions of Boule and Abbé Breuil in the matter. After a very detailed examination of the documents available, Fr. O'Connell concludes that Peking Man, like Piltdown Man, is also a case of fraud. If this is true, however, it can never be proved, because during the Japanese occupation of Peking during World War II all the fossils conveniently (?) and mysteriously disappeared, and all that remains of Peking Man are two imaginative plaster reconstructions made by Black and Weidenreich.

Let me now go on to my own presentation from the Tradition and Magisterium of the Church. Here again is St. Thomas Aquinas in his *Summa Theologica:*

"Whether the Human Body Was Immediately Produced by God?

"...*Obj*. 4) Further Augustine says (*Gen ad Litt*., 7:24) that man's body was made during the work of the six days, according to the causal virtues which God inserted in corporeal creatures; and that afterwards it was actually produced. But what pre-exists in the corporal creature by reason of causal virtues can be produced by some created power, and not immediately by God.

"*On the contrary*, it is written (*Ecclus* 17:1): 'God created man out of the earth.'

"*I answer that*, the first formation of the human body could not be by instrumentality of any created power, but was immediately from God...Now God, though He is absolutely immaterial, can alone by His power produce matter, without the aid of any preceeding material form...Therefore as no pre-existing body had been formed whereby another body of the same species could be generated, the first human body was of necessity made immediately by God...

"*Reply Obj*. 4) An effect may be said to pre-exist in the causal virtues of creatures in two ways. First, both in active and passive potentiality, so that not only can it be produced out of pre-existing matter, but also that some pre-existing creature can produce it. Secondly in passive potentiality only; that is, that out of the pre-existing matter it can be produced by God. In this sense, according to Augustine, the human body pre-existed in the previous works in their causal virtues." [16]

St. Thomas says that the human body pre-existed in the slime of the earth in passive potency only. That is the slime of the earth could not have become a body by its own or any created power, but could only have been used by God in the production of a human body. Of course, St. Thomas is not speaking of evolution but, using this same reasoning, we can say that while the human body did exist in potency in the slime of the earth, no created power such as evolution, could have produced a human body, but God alone. St. Thomas will allow a spiritual interpretation of the Hexameron, but insists on a strictly literal interpretation of Adam and Eve. This is also the position of the Magisterium. Let me read from a decision of the Biblical Commission given in 1909 during the reign of Pope St. Pius X.

"*On the Historical Character of the First Three Chapters of Genesis*

"...Whether, in particular we may call in question the literal and historical meaning where there is question of the facts narrated in these chapters which touch the fundamental teachings of the Christian religion, as for example, the creation of all things which was accomplished by God at the beginning of time, the special creation of man, the formation of the first woman from man, the unity of the human race...

"*Answer*: In the negative." [17]

In December of 1941 Pope Pius XII delivered an address to the Pontifical Academy of Science in the course of which he said:

"On that day on which God formed man and crowned his brow with the diadem of His image and likeness, constituting him king of every living soul in the ocean, the sky, and the earth (Gen 1:26), on that day the Lord the Omniscient God became his teacher. He taught him farming, the cultivation and care of the delightful garden in which He had placed him (Gen 2:15). He brought to him all the beasts of the fields and all the birds of the air that he might see how to name them, and he gave to each its proper and

fitting name (Gen 2:19-20), but yet, in the midst of that multitude of beings placed below him, he felt sadly alone and sought in vain a face that resembled his, which would have a ray of that divine image which the eyes of every son of Adam reflects. Only from man could there come another man that would call Him, Father and Progenitor; and the helper given by God to the first man comes really from him and is flesh of his flesh, made for a companion, and named from him because from him she was taken (Gen 2:23). Man endowed with a spiritual soul has been placed by God at the top of the ladder of living creatures, as the prince and sovereign of the animal kingdom.

"The multiple researches of paleontology, biology, and morphology on various problems related to Man's origin, have not to now yielded any positively clear and certain results. Hence it remains to the future to determine whether one day science, enlightened and helped by revelation, will be able to give sure and positive results concerning such an important topic.

"Do not wonder therefore if before you who have with such penetration studied, analyzed and compared the brain of man and the brains of irrational animals, We should exalt man who raises his brow enlightened with that intelligence which is the exclusive attribute of human-kind. True science will not lower or debase man in his origins, but uplift and exalt him, because he sees, acknowledges, and admires, in every member of the human family, the more or less broad imprint left in him by the divine image and likeness."[18]

Let me also read a few excerpts from Pope Pius XII's encyclical *Humani Generis*, which was issued in 1950. This encyclical was directed to a large extent against the works of Fr. Teilhard de Chardin which were then circulating privately:

"Accordingly, the Magisterium of the Church does not forbid that the theory of evolution concerning the origin of the human body as coming from pre-existent and living matter (for the Catholic faith obliges us to hold that the human soul is immediately created by God) be investigated and discussed by experts as far as the present state of human sciences and sacred theology allows. However, this must be done so that reasons for both sides, that is those favorable and those unfavorable to evolution, be weighed and judged with the necessary gravity, moderation, and discretion; and let all be prepared to submit to the judgement of the Church to whom Christ has given the mission of interpreting authentically the Sacred Scriptures and of safeguarding the dogmas of faith. On the other hand, those go to far and transgress the liberty of discussion who act as though the living matter were already fully demonstrated by the facts discovered up to now and by reasoning on them, and as though there were nothing in the sources of divine revelation which demand the greatest reserve and caution in this controversy." [19]

Pope Pius is arguing from what is called the "analogy of faith," which means that one doctrine of the faith is in harmony with every other doctrine. The doctrine of the "special creation of man," as the Biblical Commission phrased it, is not yet a defined dogma of the faith, so on the related question of polygenism, Pope Pius argues from the

doctrine of original sin, which is a defined doctrine of the faith. Here is one of the decrees of the Council of Trent to which he is referring:

"If anyone asserts that Adam's sin was injurious only to Adam and not to his descendents, and that it was for himself alone that he lost the holiness and justice which he had received from God, and not for us also; or that after his defilement by the sin of disobedience, he transmitted to the whole human race only death and punishment of the body but not sin itself which is the death of the soul: let him be anathema. For he contradicts the words of the Apostle: 'As through one man sin entered into the world and through sin death, and death has passed into all men because all have sinned' (Rom 5:12)." [20]

We see that Pope Pius rejects the notion that evolution is a proven fact, and would agree, at least in principle, with the creationist position that both the reasons for and the reasons against the theory should be openly discussed in our public schools. Pope Pius then goes on in *Humani Generis* to the question of polygenism, many Adams and Eves:

"But as regards another conjecture, namely so-called polygenism, the children of the Church by no means enjoy the same liberty. No Catholic can hold that after Adam there existed on this earth true men who did not take their origin through natural generation from him as from the first parent of all, or that Adam is merely a symbol for a number of first parents. For it is unintelligible how such an opinion can be reconciled with what the sources of revealed truth teach on original sin, which proceeds from sin actually committed by an individual Adam, and which, passed on to all by way of generation, is in everyone as his own." [23]

In 1966 Pope Paul VI held a symposium of scientists and theologians in Rome to deal with the challenge raised by polygenism to the doctrine of original sin. This challenge had been originally made by Fr. Teilhard de Chardin and carried on by his many disciples, the best known probably being Fr. Karl Rahner. In his address Pope Paul repeated Pius XII's condemnation of polygenism:

"It is therefore evident that the explanations of original sin by some modern authors will seem to you irreconcilable with true Catholic doctrine. Starting from the undemonstrated premise of polygenism, they deny...that the sin from which so many cesspools of evil have come to mankind was...the disobedience of Adam, 'first man'...committed at the beginning of history. Consequently these explanations do not even agree with the teaching of Scripture, of sacred tradition and the Church's Magisterium, according to which the sin of the first man is transmitted to all his descendants not through imitation but through propagation." [22]

So in conclusion we see that while the Church will permit Catholics to speculate philosophically on the origin of man's body (we are forbidden to speculate on the origin of his soul), we cannot insist that it is a proven fact. On the contrary the Holy Father has made it impossible for Catholics to hold the theory of the evolution of man, even so-called "theistic evolution," in its current "scientific" form. The current theory cannot

possibly be true because it demands a wide breeding base in order that a so-called "humanizing" mutation might occur. This requires polygenism, many Adams and Eves, and necessarily rejects monogenism, one Adam and Eve, on which the defined doctrine of original sin depends. Many Catholic theologians such as Teilhard who feel they have to accept the theory of evolution, deny the historicity of Adam and Eve and consequently the doctrine of original sin. If there is no Adam and Eve, there is no original sin, and if there is no original sin there is no Redemption, and our faith is in vain.

Rev. De Verne Swezey

One of the things that is very disconcerting about the theory of the evolution of man, is that so many of the so-called "missing links" between ape and man, or now between man and lemur, have either been frauds or are, at the very least, highly suspicious. The term "missing link" was originally coined by Ernst Haeckel, Darwin's German champion, who himself seems to have been guilty of fraud. Haeckel is the author of the now discredited "recapitulation theory," which maintains that the human embryo in its development recapitulates or summarizes man's evolutionary history from fish to reptile, and so on. In one of his books, while trying to show the similarity between the embryos of different species, Haeckel in one instance gave the same picture of an embryo three different titles, and in another instance doctored the picture of a dog and a human embryo to enhance their similarities. The fraud was immediately pointed out by two highly respected German embryologists, but Haeckel continued using the faked photographs for the rest of his career.

Then the Dutchman Eugene Dubois, a student of Haeckel, set off for Java determined to discover the first missing link. He found the top of a skull cap which he estimated to have a brain capacity of about 900 c.c. and, about fifty feet away, a straight thigh bone which appeared human, and two fossil teeth. At the same time and in the same strata he discovered two human skulls, now called the Wadjak skulls, of a brain capacity of about 1500 c.c. Returning to Holland he exhibited only the top of the skull cap, the straight thigh bone, and the teeth, that he claimed were the remains of a missing link which he named Pithecanthropus erectus, "the erect walking ape man." When a later expedition under Madame Selenka discovered a hearth at the same site, Dubois reluctantly produced the two Wadjak skulls, and announced that he was withdrawing his claim of having discovered a missing link, and now considered Pithecanthropus merely an extinct species of giant gibbon. If Dubois had displayed the two Wadjak skulls originally, no one would have taken his claim to have discovered a missing link seriously, but the evolutionists have refused to accept his tacit admission of duplicity, and Java Man, now classified as a Homo erectus, is still prominently featured in all books dealing with the evolution of man.

In 1953 Piltdown Man was finally exposed as a hoax after having faithfully served the evolutionary cause for forty years. Peking Man, which is also classified as a Homo erectus, has also been highly criticized, as Mrs. Stepan has pointed out, even by prominent evolutionists such as Boule and Breuil.

Dr. Henry Morris is at his best in discussing the evolution of man, and my favorite chapter in *Scientific Creationism* is entitled "Apes or Men?" Dr. Morris proceeds step-by-step through our genealogy according to the evolutionists. Dr. Schonfield mentioned that there is some difference of opinion among evolutionary scientists regarding our genealogical tree. This is putting it mildly, to say the least, and it would be more correct to say that there are no two scientists today who would propose the same tree. Let me begin with Dr. Morris' commentary on Ramapithecus. This fossil has become extremely important in recent years since so many scientists have eliminated his alleged successor Australopithecus from our genealogy:

"Ramapithecus

"The suffix "pithecus" means "ape," and a considerable number of fossils have been publicized of extinct "pithecine" animals, some of which have been considered as possible ancestors of man. These include Dryopithecus, Oreopithecus, Limnopithecus, Kenyapithecus, and others, all roughly dated 14 million years ago.

"Most evolutionary anthropologists consider Ramapithecus to be the most important of this group. This fossil was found in India in 1932 and consisted of several teeth and jaw fragments. Because the incisors and canine teeth of this creature, although apelike, are smaller than those of modern apes, some evolutionists consider this a form of hominid." [23]

In 1983 Richard Leakey discovered in Kenya fossils of a Ramapithecus which he claims is 17,000,000 years old. I don't know how this date was arrived at, but most scientists will admit, at least privately, that his dating procedure is highly subjective. For example Skull 1470 (its museum file number) was dated by using the postassium-argon method of radiometric dating on adjoining rocks. According to the University of Cambridge laboratory, rock samples were 221 million, 19.5 million, 2.6 million, and 290,000 million years old. The laboratory at the University of California in Berkely gave 1.8 million years. Leakey decided that the 2.6 million figure was correct! I should mention at this point, for whatever it might be worth, that another group of scientists, the "molecular anthropologists," disagree radically with the dating proposed by the paleontologists, the bone men. The molecular anthropologists study the similarities and differences in the proteins of living species and deduce how long ago they diverged from a common ancestor. These scientists claim that humans, chimpanzees, and gorillas diverged from a common ancestor "only" four to six million years ago, and completely reject the classification of Ramapithecus as a hominid. These conclusions have been completely ridiculed by the paleontologists.

Let me continue with Dr. Morris' comments on Australopithecus:

"The name (meaning "southern ape") has been assigned to a considerable number of different fossils, found mostly in East Africa by Louis Leakey and others. In addition to those of the Australopithecine name, others assigned to this group include Zinjanthropus, Paranthropus, Plesianthropus, Telanthropus and *Homo habilis*.

“Australopithecus is considered to have lived from about two or three million years ago, to have walked erect, and to have used crude tools. However, he had a brain size of only about 500 c.c., the same as that of some apes. The teeth were similar to those of Ramapithecus. For many years, anthropologists have been confused and divided over the Australopithecines, some convinced that he was ancestral to man and others that he was an evolutionary dead end.” [24]

After a detailed investigation of the conflicting claims of the evolutionists concerning these fossils, Dr. Morris concludes that they are not hominids, but simply extinct apes.

“...He, the same as Ramapithecus, is no doubt simply an extinct ape. The reason for his peculiar teeth, the same as Ramapithecus, was probably because of his habitat and resulting diet. In that connection, there is living today in Ethiopia a species of high-altitude baboon, Theropithecus galada, which has teeth and jaw characteristics very much like those of both Ramapithecus and Australopithecus. The ‘human-like’ characteristics of the teeth and jaws of this baboon are apparently related to his habitat and diet and are clearly not indicative of a near approach to humanhood!” [25]

Dr. Morris continues his examination of our "genealogical tree" according to the evolutionists, with a discussion of *Homo erectus*:

“A number of fossil men are now grouped under the generic name of *Homo erectus*, including the somewhat notorious Java Man, Peking Man, Heidleberg Man, and Meganthropus. These are believed to have lived about 500,000 years ago, to have walked upright, to have brains of about 1000 c.c., and to have developed a crude culture involving simple implements and weapons.

“The evidence for all this is equivocal, to say the least; Java Man was later repudiated by its discoverer, and the bones of Peking Man disappeared during World War II and are unavailable for examination. Heidleberg Man consisted of two lower jaw bones and four teeth and has been assigned by many to the Australopithecines.

“However, other fossils of this general type have apparently been found at various locations around the world. It may well be that *Homo erectus* was a true man, but somewhat degenerate in size and culture, possibly because of inbreeding and poor diet, and a hostile environment. In any case, the most recent discoveries of *Homo erectus* remains seem to rule him out as a possible evolutionary ancestor of modern man.

"Skulls that were buried a scant 10,000 years ago now suggest that, at a time when elsewhere in the Old World the successor species *Homo sapiens* was turning from hunting and gathering to agriculture, some *Homo erectus* genes still lingered in Australia." [26]

“These *Homo erectus* skulls, found in Australia, show that modern man had already been in existence long before, ruling out *Homo erectus* as a possible ancestor; he is more likely a decadent descendant. Some may question the true humanness of *Homo erectus* on the basis of small brain size (900-1000 c.c.). However, that is definitely within the range of brain size of modern man, though at the low end of the scale. Furthermore there is no necessary correlation between brain size with intelligence.” [27]

So in summary Dr. Morris completely rejects the so-called "hominid" classification of Ramapithecus and Australopithecus, considering them simply extinct species of apes, yet will grant the possibility of the humanness of *Homo erectus* despite its somewhat shaky base of Java and Peking Man. He then goes on to discuss Neandertal Man:

“The most famous of all the so-called ‘missing links’ is *Homo Neandertalensis*, pictured for more than a hundred years as a stooped, brutish character with heavy brow ridges and the crudest of habits. Many skeletal remains of these people are available now, however, there is no longer any doubt that Neandertal Man was truly human, *Homo sapiens*, no more different from modern man than the various tribes of modern men are from each other. His brain capacity was certainly human...

“As far as the stooped skeletal structure of Neandertal is concerned, most anthropologists now believe that this was due to disease, most probably arthritis or rickets.

"’Neandertal Man may have looked like he did not because he was closely related to the great apes, but because he had rickets, an article in the British publication *Nature* suggests. The diet of Neandertal Man was definitely lacking in vitamin D during the 35,000 years he spent on earth.’" [28]

“It is known that Neandertal Man raised flowers, fashioned elegant tools, and practiced some kind of religion, burying his dead. There is now even some evidence that Neandertal Man or some of his predecessors had a form of writing.

"’Communications with inscribed symbols may go back as far as 135,000 years in Man's history, antedating the 50,000-year-old Neandertal Man.’ Alexander Marshack of Harvard's Peabody Museum made this pronouncement recently after extensive microscopic analysis of a 135,000-year-old ox rib covered with symbolic engravings. The results of his findings are: that it is a sample of 'pre-writing,' that there is a distinct similarity between it and those 75,000 years later, and that...it establishes a tradition of carving that stretches over thousands of years." [29]

Both Neandertal Man and Cro-Magnon Man have been assigned by evolutionists to the Pleistocene or Ice Age, while *Homo erectus* is supposed to have lived during an earlier, warmer age, the Pliocene. Now, more and more modern type skulls are being discovered in Pliocene deposits, of which the Fontéchevade Man, mentioned by Mrs. Stepan, is just one among many. These fossils have been consistently ignored by the

evolutionists because they couldn't be fitted into their carefully constructed genealogical trees, but now since all these trees have fallen down, these modern type skulls, with all their implications, will have to be squarely faced by the evolutionists.

"Contrary to common opinion there is much evidence to suggest that modern man existed contemporaneously with all these hypothetical and very doubtful ape-like ancestors.

"Last year Leakey and his co-workers found three jaw bones, leg bones, and more than 400 man-made stone tools. These specimens were attributed to the genus *Homo* and were dated at 2.6 million years. Leakey further described the whole shape of the brain case as remarkably reminiscent of modern man, lacking the heavy protruding eyebrow ridges and thick bones characteristic of *Homo erectus*. In addition to the as-yet-unnamed skull, [later named 'Skull 1470,' from its museum file number] the expedition turned up parts of the leg bones of two other individuals. These fossils surprisingly show that man's unique bipedal locomotion was developed at least 2.5 million years ago." [30]

"Here is good evidence that modern man - modern anatomically at least - was living prior to Neandertal, prior to *Homo erectus*, and even prior to the Australopithecines! This would place man well back within the Pliocene Epoch, and for all practical purposes, completely eliminate his imagined evolutionary ancestry...[These were also the original conclusions of Richard Leakey, but apparently after he realized what he had done, he reclassified this skull as a *Homo habilis*.]

"Now that man's origin is beginning to be recognized as being much earlier (geologically speaking, in terms of the orthodox geological time system) than previously thought, perhaps anthropologists will take a serious look at the many other fossils reported in earlier strata, but which have been ignored or explained away.

"For example, there were the Castendolo and Olmo skulls, found in Italy in 1860 and 1863, respectively. Both were identified as modern skulls and yet were found in undisturbed Pliocene strata. The Calaveras skull found in California in 1886, also in Pliocene deposits, and it too was a fully developed modern skull. These were well-documented at the time, but later became more or less forgotten. Many others have been reported, but it has proved difficult to obtain convincing documentation. In any case, it seems the whole subject needs to be reopened." [31]

Dean Smalley

Tonight we began the first of three meetings on the sixth day of creation which deals with the origin of man. Our opening discussion was devoted to the theory of the evolution of man.

Dr. Schonfield presented the evolution of man according to Dr. Bronowski, but admitted that other scientists would differ with him in a few details. Bronowski claimed that the first hominid or near-man, was Australopithecus or possibly Ramapithecus, and

the first true man was *Homo erectus*, who went on to become Neandertal Man. Then in the near East one line of Neandertal Man went on to become modern man.

Fr. Staatz accepts the evolution of man as a proven scientific fact, and since the critical "humanizing" mutation demands a wide breeding base, it necessitates polygenism, many Adams and Eves. This fact, he said, demands a reformulation of the Church's teaching concerning original sin, which has traditionally depended on monogenism, one Adam and Eve.

Mrs. Stepan said that while the Church has permitted philosophic speculation concerning the origin of the human body, it has forbidden Catholics to assume that it is a proven fact. On the contrary, she said, by its repeated condemnation of polygenism, the Church has implicitly declared the theory false, at least in its current scientific form. She said that the acceptance of this theory has led many Catholics, such as Teilhard de Chardin, to reject the historicity of the story of Adam and Eve, and consequently the doctrine of original sin. If there is no original sin, she said, then there is no Redemption, and the Christian faith is vain.

Rev. Swezey presented the creationist rebuttal of our genealogy according to the evolutionists. He rejected the hominid classification of Ramapithecus and Australopithecus, and asserted that these creatures were simply extinct apes. He granted that Austalopithecus' alleged descendant, *Homo erectus*, who is supposed to have a brain capacity of about 1000 c.c., could well have been a true man, since this capacity is within the human range, though at the low end of the scale. The evolutionists now admit that Neandertal Man, who lived during the Pleistocene or Ice Age, was a true man. Rev. Swezey concluded by claiming that more and more skulls of a modern type are being discovered in the preceding Pliocene Age, which have been consistently ignored by the evolutionists, because they eliminate for all practical purposes our alleged evolutionary ancestry.

****

References

1 Jacob Bronowski, *The Ascent of Man*, Little, Brown and Co., Boston, 1973, p.38.
2 Bronowski, *Op. cit*. , pp.38,40.
3 Bronowski, p.41.
4 Bronowski, p.45.
5 Bronowski, pp.64,65,73,74.
6 Owen Garrigan, *Man's Intervention in Nature*, Hawthorne Books, New York, 1967, pp.98,99.
7 Garrigan, *Op. cit*., pp.99,100.
8 Garrigan, pp.100,101.
9 Ronald Millar, *The Piltdown Men*, Ballantine Books, New York, 1972, pp.243,244.
10 Robert Speaight, *Teilhard de Chardin*, Collins, London, 1967, pp.327,328.

11 Speaight, *Op. cit*., pp.194,195.
12 Patrick O'Connell, *Science of Today and the Problems of Genesis*, Christian Book Club of America, Hawthorne, CA, 1968, pp.98,99.
13 O'Connell, *Op. cit*., pp.102,103.
14 George O'Toole, *The Case Against Evolution*, MacMillan Co., New York, 1925, p.323.
15 Patrick O'Connell, *Original Sin in the Light of Present-Day Science*, Lumen Christi Press, Houston, TX, 1973, pp.24-26.
16 St. Thomas Aquinas, *Summa Theologica*, (I, Q91, a2), Benzinger Brothers, New York, 1947, pp.462,463.
17. *Rome and the Study of Scripture*, Abbey Press, St. Meinrad, IN, 1964, pp.122,123.
18 Pope Pius XII, Address to the Pontifical Academy of Science, *L'Osservatore Romano*, translated from the Italian by Bro. Stanislaus Ribera Faig, O.S.B., December 1,2, 1941, p.1.
19 Pope Pius XII, *Humani Generis*, Weston College, Weston, MA, 1951, p.41.
20 The Jesuit Fathers of St. Mary's College, *The Church Teaches*, Herder Book Co., St. Louis, 1955, p.159.
21 Pope Pius XII, *Op. cit*., p.43.
21 Quoted in: John McKee, *The Enemy Within the Gat*e, Lumen Christi Press, Houston, TX, 1974, pp.286,287.
22 Henry Morris, *Scientific Creationism*, Creation-Life Publishers, San Diego, CA, 1974, p.172; footnote, p.173, *Science News*, Nov 27, 1971.
24 Morris, *Op. cit*., p.173.
25 Morris pp.173,174.
26 Morris, footnote, p.174, *Scientific American*, October, 1972.
27 Morris, pp.174,175.
28 Morris, footnote, p.175, *Science Digest*, February, 1971.
29 Morris, footnote, p.176, *Science Digest*, March, 1973.
30 Morris, footnote, p. 176, *Science News*, Nov 18, 1972.
31 Morris,pp.176,177

****