A GREAT FRENCH SCIENTIST

Mr the PROFESSOR

Who are you *LOUIS BOUNOURE?*

Interview by André Giovanni I'*d like to know whether this university was inaugurated with a solemnity worthy of it.*

On 22 November 1920, the anniversary of the entry of French troops into Alsace, a grand ceremony was held in the auditorium of the Palais Universitaire to mark the opening of the university. It was presided over by Clemenceau and Poincaré, by the three victors, Joffre, Foch and Pétain, by Millerand, the General Commissioner, and by the new Rector, Sébastien Charléty; around them were all the full professors in their official robes, and numerous delegates from various universities in France and abroad in their multicoloured costumes; The vast hall was literally carpeted with the flags of the Allied nations; the speeches, and in particular that of Pierre Bûcher, the Alsatian patriot who had fought so hard under the German occupation to maintain French thought, these speeches made every heart beat faster. After experiencing this extraordinary day, who could forget it?

Imagine the emotion, the enthusiasm, the immense joy of the young master I was then, astonished to feel associated with such grandiose events, and who wondered with some trepidation whether he would be worthy of the lofty mission that the whole of France was entrusting to him in the regained provinces.

We all know, Professor, that the welcome given to Alsace was like a groundswell whose unanimous and warm enthusiasm had the effect of a veritable plebiscite. But what was the attitude of the Alsatian students, many of whom undoubtedly still had only an imperfect command of our language? What were your first contacts with them?

Well, I was immediately reassured: right from the start, all the pupils who took my classes showed a zeal, a discipline and an ardour that amazed me; I immediately felt that I was 'biting' at their spirit and their curiosity and that my teaching, given of course entirely in French, only stimulated their good will and their efforts.

What did your teaching involve?

My service was divided into three parts, devoted respectively to the P. C. N. (first year of sciences for medicine, which later became the P. C. B.), to the bachelor's degree (the two certificates in zoology and general biology), and finally preparation for the agrégation competitive examination.

Which of these three shares did you remember best?

I love teaching, and each of my roles was attractive to me, even when, as holder of the chair of general biology, I had to give this subject the lion's share of my activity. But perhaps my best memories go back to my lectures at the P. C. N., because the audience was larger, younger, and more eager and fresh-minded: these young people, who had just left the lycée, found it a pleasure to introduce them to the essential phenomena of life; and I can even say that I made many unsuspected friends among them...

What do you mean by that?

... I have been approached many times by a gentleman who said to me I'm Doctor so-and-so, and I did my P.C.N. with you in such-and-such a year; since then, I've never forgotten you. And one day, one of them added: "What made me admire your course was that with you we understood everything! I can say that this is the praise that has given me the greatest pleasure throughout my career, and I wouldn't want to exchange it for any official accolade; that's why I'm quoting it, but in confidence...

As well as teaching, you've also carried out laboratory research. What was the main focus of this?

As the 14-18 war had kept me away from any scientific work for nearly five years, I initially had to devote all my time to putting the finishing touches to my courses. Soon, however, with a well-equipped laboratory at my disposal, I was able to undertake the study of an important biological problem, that of the germ line, to which I had to devote many years of work.

What is the problem?

The German naturalist A. Weismann, it consists in distinguishing two different parts in every living being: on the one hand, the body of the individual, which has only a limited life, and which is not strictly speaking involved in reproduction; on the other hand, a special line of cells, the germ line or germen, which provides the reproductive cells in males and females, and continues uninterrupted from one generation to the next, thus ensuring the persistence of the species. However, this concept is much debated, and there was a need to study it again in a vertebrate such as the frog.

How could it be tackled and resolved?

It's a matter of embryology: the point was to show that in the egg the germ is already recognisable, and can be distinguished from the protoplasmic part which will form the body of the individual. This is what I was able to prove by means of a categorical experiment (because in biology certainty can only be acquired by the method of experiment): I destroyed the germ, by the action of ultra-violet rays, in eggs ready to develop: the individuals, produced three months later from these eggs, were practically devoid of reproductive cells; I had carried out a real castration in the egg. It was this research that the Académie des Sciences awarded the Prix Vaillant in 1938.

In an old bulletin from the Flammarion bookshop, the famous biologist L. Cuénot, of the French Academy of Sciences, wrote of one of your works: "Mr Bounoure has treated this immense subject with objectivity.

Born in Thiers in 1885 to an old Auvergne family. Studied at the Faculty of Science in Clermont-Ferrand, where he graduated at the age of 19 and was immediately appointed assistant to the chair of zoology. He then worked at the École Normale in Paris, preparing for the competitive examination for the agrégation in natural sciences, which he passed with flying colours at the age of 23. Doctor of Science in 1919, after four and a half years in the army. He was appointed lecturer at the Strasbourg Faculty of Science when the French university moved back to the Alsatian capital. The young scientist's entire career was to unfold there: full professor of general biology in 1932, laureate of the Académie des Sciences, delegate in 1939-40 to the scientific services of the war (combat gases, bacteriological warfare), then successively after 1945 president of the Association philomathique d'Alsace-Lorraine, president of the Société de biologie de Strasbourg, director of the Musée zoologique, knight of the Légion d'Honneur, he reached retirement age in 1955. However, the Faculty of Science gave him the use of his laboratory and continued to entrust him with preparatory teaching for the agrégation competitive examination, which he had been doing since 1920; he also remained director of research at the Centre national de la recherche scientifique.
Still young in appearance, activity and enthusiasm, despite his age, he never stopped studying, researching, writing articles and books on the problems of life.

When the professors and scientists of all kinds who had come to Alsace after the victory of 1918 arrived, the University of Strasbourg looked like a long series of buildings and gardens, stretching from the university palace to the astronomical observatory; this architectural ensemble lacked neither scope nor harmony, and it is regrettable that it was somewhat disfigured by the subsequent addition of parasitic buildings required by new needs. The various buildings of the Faculty of Science retained their original purpose, and the former **Zoologisches Institut** des Allemands, located between the rue de l'Université and the boulevard de la Victoire, became the Institute of Zoology and General Biology, to which was added, on the upper floors, the vast and very important Zoological Museum.
Despite numerous internal modifications and improvements, this is still the house of science where Professor Bounoure was given a vast laboratory, and it was here that his destiny as a scientist was to be definitively established.

***

Professor, you had the privilege of being one of the first people to work on the new French university in 1919,

AN ARTICLE BY PROFESSOR LOUIS BOUNOURE

EVOLUTIONISM and HUMAN PROGRESS

"Evolutionism is a fairy tale for grown-ups".

- *this theory has contributed nothing to the progress of science*
- *it is useless*
- *it is part of a 'magical' conception of the Universe*

PRONING the word *progress* inevitably introduces a magical and fascinating element into the discourse, leading people to think that progress is the only way *to achieve a better world.*
in a region inaccessible to the denials of experience... The notion of progress, disproportionately expanded by all the theories of biological evolution
and by all the winds of the revolutions that are shaking the world, is in the process of bewitching a growing number of minds and making them lose their heads...". Who said this? The philosopher Marcel De Corte,
and what he says about progress could be applied word for word to evolution; the two notions are con-
nexes, are complicit, interchangeable, because they have only a very vague meaning; when we speak of the evo- lution of life, of the progress of morals, of the progress
of the arts simply means *the history* of people, mores or the arts, but of a history that is subject to a kind of mysterious force that always pushes the world, living beings, humanity and civilisation in the same direction.

Is this movement real? Are man and the universe caught up in a perpetual transformation of beings and things? We can't argue with that
without first specifying what kind of evolution or progress we are talking about, because these words have no precise meaning in themselves. The term *evolution* is usually taken in its biological sense: it
progress, on the other hand, is understood primarily as a human phenomenon. As we shall see, these are two independent issues. The first part will be devoted to biological evolution, and the second to the question of human progress.

The dogma of evolution in biology. - For most biologists today, evolution is a kind of dogma, an *a priori* truth that is taught in schools as the *ABC of* nature, and outside of which, in science and scientific philosophy, there is no salvation. This theory claims to solve the mystery of the *origin of* living *species*: it consists of believing that the innumerable species of animals that populate the earth arose *through the transformation of* older species, and that life thus developed and diversified gradually from extremely simple organisms that were, in the depths of time, the primitive stock; the living world of today would be the result of a progressive *transformation* of the first forms of life: this *transformism* therefore assumes an essential variability of living beings.

The entirely hypothetical nature of such a theory should be clear from the outset. The zoologist Yves Delage, who was a professor at the Sorbonne at the beginning of this century, wrote in 1903: "I readily admit that one species has never been seen to give rise to another, and that there is no absolutely formal observation to show that this is the case.

We have never seen with our own eyes one species transform into another, and all the experiments that have been carried out to bring about this transformation have always failed.

Consequently, evolution can only be invoked as a phenomenon of the past; it is a problem that falls entirely within the remit of palaeontology, the science of ancient animals preserved in fossil form in the earth's strata.

Cryptogenic origin of large animal groups. - In the succession of these layers, do we see the different animal groups gradually emerging from one another, for example fish gradually transforming into batrachians, batrachians into reptiles, reptiles into mammals? - Not at all. On the contrary, we always see each animal group appear suddenly, in an abrupt manner, without any real link of kinship or of origin.

never happened. However, I consider evolution to be as certain as if it were objectively demonstrated". In short, what science is asking of us here is an act of faith, and it is indeed in the form of a kind of revealed truth that the notion of evolution is generally presented. But this so-called truth is no more than a pseudo-truth, born of false reasoning and a false conception of the nature of life.

Naturalists, looking at the animal kingdom as a whole, have noted that the various groups can be *broadly* classified according to the progressive complication of their structure, and have concluded that the most complex forms derive from the simplest forms through descent and refinement. However, this line of reasoning is flawed from a logical point of view, because real differences between structures do not necessarily imply that there is a filiation link between one and the other, and therefore do not prove the descent of one from the other. Furthermore, to imagine that progress can be made between so-called *inferiors* and so-called *superiors* is to fail to understand that, in both, all life, by its very nature, requires and manifests an *essential perfection,* inseparable from the ability to live: What Bergson called "the paradox of the amoeba" ceases to be a paradox when we see and understand that this humble cell, thanks to its high structure, performs the fundamental functions and processes of life as successfully as the most complicated vertebrate; and modern observations made with the electron microscope reveal in the protoplasm, the material support of life, a hitherto unsuspected world of differentiations and organelles. Where will the theory of evolution take this masterpiece of complex organisation - what we mistakenly call a 'simple' cell - from?

In reality, evolutionism is an imaginary construct that has no basis in either logic or biology.

Stability -------of current organisms. - Assuming transformists, that living beings are eminently variable, that they tend to transform themselves constantly in order to perfect themselves, can we see any signs of this variability in today's animals? However, all naturalists agree in recognising and affirming that the living world shows us no transformation, no change of evolutionary character. In 1931, in his book on *the Problem of Evolution,* Caullery proclaimed "the experimentally observed stability of present-day organisms". Today, says Jean Rostand, "life is no longer constructive, evolving... We belong to an old, frozen, stabilised universe". As the evolutionists themselves say, there is no such thing as "life".

progressive transformation in relation to another, older group. For the theory in question, this is a very serious fact.

This was the conception of the naturalist Haeckel, who, in 1867, derived the entire animal kingdom up to the human species from an imaginary microscopic being through a succession of 22 evolutionary stages. Haeckel revealed himself to be a very bad zoologist, because even the slightest knowledge of animals would severely condemn such a crude view, but he was logical: evolution must logically be continuous, or else the theory is worthless; if we see a single group emerge independently of any other, the evolutionist explanation collapses, since the origin of this group escapes him. Now, there is not *one* break in the alleged evolutionary lineage of animals, but as many breaks as there are large groups with new characters. All these groups have no roots; they have, as we say, a *cryptogenic* origin*, that* is to say, a mysterious, hidden origin; we never see them descend, by transformation, from an earlier group.

This indisputable fact irretrievably dooms the theory, and evolutionists are well aware of this; they are therefore making desperate efforts to find *intermediate types* that would bridge the gaps between the groups.

The so-called -intermediate types". - Note that that if groups of animals had really descended from one another, we should have an abundance of forms of passage linking them together, which would bear witness to this descent. In reality, however, such evidence is lacking, and with good reason.

Let's take the class of Birds as an example: these animals appeared suddenly in the Jurassic period, where they were first represented by an admirably preserved fossil, *Y Archaeopteryx* (Figs. 1 and 2). Palaeontologists have tried to see in it the intermediate link between the Reptiles and the Birds, in other words the witness to the transformation of the Reptile type into the Bird type. Now, in all its essential features, it is a true bird: general shape, bipedal position, body covered with feathers, front limb shaped like a wing, fusion of the bones of the head into a cerebral skull, fusion of the clavicles into a fork, elongated shape of the shoulder blades, pubic bones pointing downwards, etc.: these are undoubtedly the characteristics of a bird. These are undoubtedly typical bird characteristics.

It is true that it has a number of features that differentiate it somewhat from modern birds, namely the presence of conical teeth on the edge of the jaws, a long tail with indehiscent vertebrae, and a long, long tail.

Archaeopteryx has a double row of rectrices, three free clawed fingers at the end of the wing (Fig. 4), pelvic bones that are not fused into a rigid pelvis: these, say evolutionists, are Reptilian characteristics, and Archaeopteryx therefore represents a type of transition between Reptiles and Birds. But this overlooks the fact that all terrestrial vertebrates in general have teeth in their jaws, free fingers with claws or nails, and a tail made up of numerous vertebrae; there is nothing particularly reptilian about these characteristics, and what needs to be said is that Archaeopteryx, quite simply, participates in certain common features of the organisational plan of terrestrial vertebrates. Moreover, some of these characteristics are found in the embryos of today's birds.

The tail: in the ostrich and the owl, the tail of the embryo has numerous vertebrae and reveals the beginnings of rectus feathers; it is only later that these caudal vertebrae coalesce and fuse to form, in the adult bird, a short *pygostyle* or rump bone. In many birds, the wing fingers have claws at their tips, which are still visible when the animal is young.

Lastly, the wing of Archaeopteryx is a bucket wing, in which the reduction of the terminal parts of the limb has been carried to a lesser extent than in the present-day bird, but which is nonetheless based on the typical bird model. This model is quite different from the one found in secondary times in a flying reptile, the *Pterodactyl:* this animal, the size of a large lizard, was equipped with a wing membrane, supported on the one hand by the disproportionately elongated fifth finger of the hand (Fig. 5), and fixed on the other hand to the flank and the hind leg. We can see that the solutions respectively adopted for flight by the Bird and by the Reptile are completely unrelated; they are entirely different organic inventions, and mark a profound gulf in the nature of these two animal types.

In short, Archaeopteryx is a true bird, and we can even infer from its feather cover that it had a constant temperature, which is characteristic of this group of vertebrates. When this fossil was discovered in 1861 in the lithographic limestone of Solenhofen, in Bavaria, the first observers had no hesitation about its nature as a Bird, and even some modern evolutionists, such as V. Franz (1943), affirm that they consider Archaeopteryx to be a true Bird. Between this bird and the reptiles, there remains an enormous gap without the slightest intermediate passage.

Archoeopteryx **(A. lithographica),** as discovered in 1861 in the lithographic limestone of the Solenhofen secondary terraces in Bavaria.

Archoeopteryx, reconstruction of the animal; note the upright position, the shape of the wing which retains 3 free fingers, the long feathered tail, the presence of pointed teeth on the edge of the jaws, but the general morphology is that of a bird.

The Archaeopteryx seen under various aspects. **A,** the skeleton in place in the body; B, the reconstructed animal at rest; **C,** the same animal in flight.

Comparison of the reconstructed Archaeopteryx wing and the Pheasant wing: the only notable difference is the presence of the 3 free droigts in Archaeopteryx.

Subterfuge

-evolutionism. - However, the

This does not mean that evolutionists are abandoning their theory or their demand for intermediate types. So what do they do? Let us quote one of them: "To fill the gap between the flying Archaeopteryx and the flightless Reptile, Palaeontology has not revealed any transitional type. We were thus led to build a hypothetical intermediate being, the *Proavis*". (Fig. 6). Transformism has vied with invention to produce models of this fictitious Proavis: we can choose between those of Pycraft, Beebe, Nopcsa, Steiner and others, all of which are real only in the minds of their creators; but it is so easy to imagine them! Intermediate types are lacking, but that's no problem! False witnesses will be used to re-establish, with a conscientiousness bordering on imposture, the perfect continuity that is so cruelly lacking in the so-called products of evolution.

We would be mistaken if we believed that the imagination of scientists remains devoid of resources when faced with the cryptogenic origin of the great orders or classes of the animal kingdom. Haeckel had already shown the way by inventing theoretical ancestral forms, Provertebrates, Protoselacians, Protamniotes, Promammalians, which had disappeared over the ages, but which progress in palaeontology would one day lead to their discovery; Haeckel was never embarrassed, it was remarked, to "populate the ancient seas and continents with diagrams".

It is a less crude but undoubtedly more deceptive trick that inspires what evolutionists call *the genealogical tree* of the animal kingdom: it is a graphic representation in the form of a branched tree, which is supposed to translate all the relationships of descent of the various animal groups (Fig. 7); the leaves do indeed represent the real classes and orders of zoology, but the trunk and the branches that link them in a continuous manner are nothing but an illusion or a subterfuge. The genealogical tree considers as proven the very thing that is in question, namely the real filiation of these groups; in essence, it is nothing more than a petition of principle; it has no scientific value.

The all-too-famous

---- evolutionary series. - But finally, it will be said, can transformism invoke any real fact, which seem to prove him right? Yes, he finds a positive argument in the existence of what are known as *evolutionary series.* An *evolutionary series* is a group of species or genera that appear to derive from one another, over time, by progressive and regular accentuation of the character or group of characters that is the subject of the variation.

There are various examples of this in invertebrates, particularly freshwater molluscs such as Paludines, which, in the Pliocene strata of the Danube region, show a continuous variation in the ornamentation of their shells, going from a smooth shape in the oldest deposits to increasingly keeled and tubercular shapes in the most recent strata. But is this a phenomenon of evolution over time? In fact, in the Paludines of today's lakes, smooth and highly ornamented forms can be found side by side, which seems to simply reflect the basic diversity of the species, whose polymorphic character, which is purely ornamental, has nothing to do with the passage of time.

Among vertebrates, however, we have the classic example of the ancestors of the horse, represented by the series of fossil equids from America (Fig. 8): it includes ten or so species that follow one another chronologically throughout the Tertiary era, showing a transformation of the legs in the direction of a progressive reduction of the lateral digits; it leads from a small five-fingered mammal the size of a fox *(Eohippus,* from the Eocene epoch) to the present-day horse with a single digit; the teeth, at the same time, gradually pass from the omnivorous type to the specialised herbivorous type.

What is the value of this schematically unique example?

It should be noted that these successive genera are classified by reference to only one or two characters, the legs and teeth, all the other organisational characters being unknown; it is undoubtedly abusive to be satisfied with the variation of two characters to conclude that these different Equidae are truly related. What proves this is that the origin of the horse was once sought with just as much probability in European fossil types (Palaeotherium, Anchitherium, Hipparion, Horse series), for which it was subsequently recognised that they were forms independent of each other, and that each of them had disappeared in its own time, without being transformed, when the horse made its appearance; their association in the same so-called evolutionary series was merely an illusion.

In other groups, the "evolutionary" classification can be established in several different ways, depending on whether one character or another is taken as a reference, which proves that such a classification is always artificial. In the past, palaeontologists thought they had recognised many of the "sequences of the animal world", which have now been abandoned as being devoid of any phylogenetic significance. But official transformism continues to gallop along on its "great parade horse", which, however, does not represent an argument of great weight. In fact, whether we are talking about comparable fossil specimens, or machines of a certain type, or objects of the same kind that differ to a greater or lesser extent in a given characteristic in each series, it is always possible to classify them in relation to the variations in this characteristic: in this way we obtain a logical classification, an ideal link, but one that in no way implies genetic kinship or a relationship of descent.

Let us suppose, however, that the American series of equidae fossils does indeed represent an example of real evolution, i.e. the gradual transformation over time of a series of animals descended from one another and which led to the birth of the horse species; In any case, this would only be a case of *microevolution,* i.e. a phenomenon of very limited variation within a zoological family; and this microevolution could in no way account for the cryptogenic origin of the great types of organisation that we see appearing suddenly in ancient times, like new inventions of life.

Theories

---------- explanations. - If evolution is real, we must be able to explain how it is achieved. But we shall see that it is impossible to assign any plausible mechanism to it; this is quite natural, since we cannot explain something that does not exist. Let's examine the value of the major concepts that have been invoked to account for the facts of palaeontological observation.

The old theory of *Lamarckism* sought the causes of evolution in the animal's living conditions and in the efforts it made to adapt to them: thus, for Lamarck, the giraffe was born of the efforts made by a certain desert quadruped to reach and graze on the leaves of palm trees.

Skeleton of the wing of a flying reptile from the secondary era, the Pterodactyl: the 5e finger is considerably elongated to support the wing membrane, which is also attached to the animal's flank and hind limb; the flight apparatus here is entirely different from the bird's wing.

The **Proavis, a** fictitious model imagined by Nopcsa as a form of transition between Reptiles and Birds; scales developed on the front limbs and along the tail simulate the appearance of feathers; these are pure inventions that do not correspond to any positive palaeontological data.

The family tree of the animal kingdom; there are many models, all the result of the fertile imagination of evolutionists.

Changes to the leg skeleton in the
The "evolutionary series" of fossil Equidae: progressive raising of the foot, gradual reduction and disappearance of the lateral toes. **A** to **F,** legs seen from the front; a to **f,** lateral view. - **A, Eohippus** (Eocene); **B, Mesohippus** (Lower Oligocene); **C, Miohippus** (Upper Oligocene); **D, Meryhippus** (Miocene); **E, Pliohippus** (Lower Pliocene); **F, Equus** (Middle Pliocene and present).

which had gradually lengthened its eou and its front legs; explained in the same way the Heron, which had lengthened in ponds without getting wet, the mutated individuals and by intermarrying them, thus isolate slender body and worn out its legs by certain breeds for their beauty, their curious appearance or their squeezing through narrow holes, etc. usefulness: this is how basset hounds, cats, etc. are bred.

Let's underline the childish nature of this theory: you can have ask what the ancestor of the Giraffe ate before it died. What is mutationism worth? Can it explain evolution? that its neck had lengthened sufficiently, what necessity of the species? This seems impossible for the following reasons forced the Heron's ancestor to walk in ponds, etc. But next :
there is a far more serious fault to be ascribed to Lamarckism, and that is that 1) Mutation is always a rare, isolated accident, not the result of a single event.

it is based entirely on the notion of the heredity *of acquired traits:* this consists in believing that the traits developed or acquired by the animal during its life can only be propagated by the very rare chance that a male and a female carrying the same mutation pass to their descendants and can be accumulated in successive generations if it is not repeated several times in a row under the same form. It has now been demonstrated by countless experiments that the modifications acquired by the individual are never passed on to his descendants; they are the model for this. They do not enter into the hereditary heritage of the lineage, they cross-breed between the normal individuals of a species and therefore cannot introduce any modification into it. Thus deprived of its essential basis, Lamarckism now appears to be gradually being eliminated: "their disappearance," says Guyénot, "is a sign of the end of the line.
as devoid of any explanatory power. almost absolute rule, their survival a rare eventuality ".

Lamarck explained its legs to walk Serpent, which had acquired a angoras, yellow finches, white mice and so on.

Darwinism and selection

---- are based on the observation of spontaneous variations and on the idea of *natural selection. An* excellent observer, Darwin had noticed that there are small congenital differences between individuals of the same species, which can constitute either an advantage or a disadvantage in the struggle for life; and he thought that vital competition led to a sorting out, a natural selection of the most favoured animals, the best armed, the most able to live, as occurs in the improvement of domestic breeds through the *artificial* selection practised by breeders. For Darwin, *natural* selection, a kind of automatic choice, is the great mechanism of evolution and the progress of species.

And yet this role attributed to so-called natural selection is illusory: the individual differences invoked by Darwin either confer no real advantage on the individual, or the advantage is too small to give rise to selection. The great causes of death in nature - food shortages, epidemics, wars between species, floods, fires - destroy individuals at random and without making a choice. On the other hand, genetics, the science of individual heredity, has shown that selection is limited to sorting out the detailed characteristics that already exist in the species, but that it is incapable of bringing out new characteristics and, consequently, of producing a transformation of the species.

We cannot fail to note how contradictory it is to imagine a selection mechanism in nature, *modelled on the artificial selection of breeders;* What breeders achieve is the art of sorting animals into a selection of qualities and isolating them into distinct breeds, in other words, precisely what nature is incapable of doing, without which breeders would be mutilators; the art of zootechnics, and this is true of all the *arts,* is to add man to nature in what nature, reduced to itself, is incapable of doing. It was therefore a flagrant absurdity to imagine the existence of *natural* selection, with reference to artificial selection, which categorically denies it. And who is unaware of the immense impact Darwinism has had on biology and biological philosophy? It would seem that a theory needs to contradict the simplest logic to be guaranteed the greatest success. Moreover, Darwinian inspiration still has a place in the most modern theory of evolution, *mutationism.*

Neo-Darwinism:

mutationism. - Based on the phenomenon of mutation, mutationism is sometimes considered to be neo-Darwinism, because certain mutations are confused with the individual variations observed by Darwin, and because selection is still involved here to ensure the persistence of mutations.

So what is a mutation? It is a change which occurs spontaneously to modify a detailed character of a species and which is immediately transmissible to descendants, because it is due to an alteration of the chromosomes and as such affects all cells, including the re- **1 0** producing cells. Such a sudden and fortuitous variation produces abnormal and curious types in animals, such as hornless oxen, ca- mard oxen, angora cats, blue-winged peacocks, naked-necked hens, porcupine pigeons (Fig. 9), etc.; various mutations affect the coat of mammals (Figs. 10, 11); albinism is found in **1** *1* many animal species and also in man. Some mutations are pathological, others are genetic.

Porcupine pigeon, a mutation of the Wood pigeon.

Four mutations reciprocal two by two, combined in four types of individuals in the Guinea pig **(Cavia cobaya):** bristly hair in individuals **a** and **c;** smooth coat in b and d; black pigment type in **a** and **b;** albino type in c and **d.**

Various coat anomalies in mice, caused by mutation.

EVOLUTIONISM

2) Mutation is almost always a diminutive, harmful or pathological phenomenon: a hornless ox, a bare-necked hen, a hedgehog pigeon, a basset hound, these are all cripples; it is to mutations that we must relate in man various hereditary diseases or anomalies, albinism, surditism, colour blindness, haemophilia, ichthyosis, optic nerve atrophy, polydactyly (Fig. 12), mongolism, and finally certain fatal diseases, such as amaurotic idiotia, which does not allow us to go beyond adolescence. Is it not a real challenge to try to base a mechanism of evolution and improvement on a cause of monstrosities, diseases and even death? Mutations have been studied in particular in a small Dipteran insect, the *Drosophila* (Fig. 13), which has a very large number of natural mutations in body colour, eye colour, length and shape of the wings, shape of the abdomen, etc. However, Morgan, the great specialist in his study, declared that none of the mutant varieties of the Drosophila could compete in the wild with the wild type, which has all the normal characteristics of the species.

3) Finally, the mutation only ever concerns relatively minor details, which can sometimes be very detrimental to the individual, without however significantly altering the specific type: Whether a Drosophila has a black body or a brown body, red eyes or white eyes, long wings or truncated wings, it is still a *Drosophila melanogaster;* whether a hen has a naked neck or a feathered neck, it is still a female *Gallus domesticus;* a man afflicted with albinism or haemophilia is a crippled, diminished man, but he is still a man. An organism carrying a mutation does not thereby go beyond the limits of its species; it does not become a new species.

It is true that mutationists try to salvage their theory by assuming that incidental circumstances can isolate mutation-bearing individuals from the primitive species, for example certain geographical conditions, or the inability of primitive and mutated individuals to form a sexual union. But it is not conditions extraneous to the mutation itself that can give it the truly creative power it lacks to be a factor in evolution.

Creative life

---------- forms. - Let us not lose sight of the fact that what we are trying to explain is the appearance of major new organisational characteristics, of these important inventions or original creations, of which the animal kingdom provides us with examples at every moment; here is a very simple example taken from the comparative anatomy of vertebrates:

In fish, the limbs, i.e. the pectoral and abdominal fins, are flattened and enlarged oars, supported by a skeletal stem bearing lateral rays (Fig. 14): this type of limb, known as a *pterygium,* has no real joints allowing relative movements between the parts; the oar is flexible but not articulated. -- In terrestrial vertebrates, the limb or leg is of a completely different construction: it is an elongated, cylindrical *chiridium*, formed of segments articulated together like locomotive levers, and ending in a five-fingered hand. However, there is no transition from one type to the other; compared with the flipper, the leg is an entirely new device, an original acquisition of vertebrates from batrachians.

Zoology shows us many other organic innovations: the invention of hormone glands with a rich physiological variety in vertebrates; the invention of three types of wings, fundamentally different, in insects, birds and bats; the invention of three types of respiratory apparatus, gills, tracheae and lungs, adapted to the different types of life in animals.

Or the construction of the eye in three distinct ways, each resulting in the same type of apparatus in insects, cephalopods and vertebrates. Life thus appears to be rich in organic forms and apparatus, and it is not the very mediocre accident of mutation that can account for this marvellous power.

Two examples of feet with supernumerary toes **(polydacfyly)** in the human species.

Drosophila **(Drosophila melanogaster), a** small vinegar fly. 1, female; 2, male. This species, remarkable for the large number of its mutations (several hundred), has made it possible to study the phenomenon of diversification of individuals within the species.

Comparison of the skeleton in the two types

Scientific futility and inanity of evolutionism. - So what remains of this cumbersome theory of evolution, which is named after

Is it the very formula of the universe? There is nothing left of it, it explains nothing, it is nothingness, and, because it is nothingness, it is entirely useless to science.

Since the beginning of the century, biology has made considerable discoveries in the main fields of embryology, individual heredity, biochemical factors, ultra-microscopic agents, and so on.

The results obtained in these five areas are achievements of the first magnitude, to such an extent that the biology of the twentieth century appears to be entirely different from that of the nineteenth century. Paleontology itself has shown, in the hands of its illustrious creator Georges Cuvier, that it needed no help from transformism.

That evolutionary dogma is useless to science, which it is not based on any proven positive data, on any irrefutable proof, but is nothing more than a vast ideological system, and even one that offends pure logic, because it is nothing more than an immense petition of principle: palaeontological facts are used and interpreted to affirm evolution and, at the same time, find their explanation in this theory invented for them. It is a magnificent example of a *vicious circle;* in the same way, until Pascal, the horror of the vacuum was invoked to explain the rise of water in pumps, and this rise at the same time peremptorily proved the horror of the vacuum; yet experience has made it possible to do justice to this anthropomorphic physics, while transformist palaeontology enjoys in peace the alibi of bygone ages.

That evolutionism, a purely imaginary construct, cannot and does not do science any favours, is the best confirmation of its total inanity.

Professor Louis BOUNOURE

be surprised? Not only

The discovery of the **Coelacanth,** caught by the Dakota in 1954 in the Mozambique Channel; in the foreground, Professor J. B. Smith, who has his hands on the fish, on the left Captain Hunt, Commander of the Dakota, and on the right Mr P. Coudert, Governor of the Comoros.

Continuation and end of Professor Bounoure's article:

EVOLUTIONISM AND HUMAN PROGRESS

In our next issue

As part of the survey "Where is the Church in France going", Le Monde and La Vie previously published

MAY

- A study of thought

  And what if Teilhard de Chardin was just a science fiction writer?

JULY

- Evolutionism - The story o f a scientific bluff - Les faux du Père Teilhard de Chardin - Progressism is based on falsifications.
- Evolutionists sabotage an archaeological treasure.

AUGUS T

who you are

PROFESSOR LOUIS BOUNOURE?

continued from page 52

a clarity and reliability o f information that make i t one of the world's most comprehensive
biology today. What book was he talking about?

It was the book on Sex and Sexual Reproduction that I wrote during the last war, when the University of Strasbourg was withdrawn to Clermont-Ferrand. My research on the germ line had led me to set out in detail all the phenomena of sexual reproduction; the work was in two volumes, now out of print.

They were supplemented in 1956 by a book on the sexual instinct, an important and curious chapter in the psycho-physiological life of animals. A Madrid bookseller asked my permission to produce a Spanish edition of this book, which has recently been published.

• ***Professor, you are known not only for your descriptive and, as it were, technical treatment of living beings, but also for your philosophical interest in the phenomena of life. Can you tell me briefly what are your general ideas on how to understand life?***

In a book on the Autonomy of the living being, I set out to combat a widespread error, namely that this being is under the close dependence of the environment, that it is passively moved, determined and tossed about, so to speak, at the whim of external physico-chemical conditions. I have shown that, on the contrary, the living being possesses all its essential determinations within itself, and that it behaves in its environment as an independent power, acting, through and for its life, according to laws and goals that are its own.

In a more recent volume, entitled Determinism and Purpose, I emphasised some of the guiding principles of life: it is not subject to caprice or chance, and nothing happens in the living world that is not subject to determinism, i.e. to precise conditions prepared within it from the egg that gives it birth. But to say that they are prepared, this means that they do not result in the production of just anything: they act with a view to a goal, an end, which is life itself; so that determinism and finality are basically one and the same principle, which orders, regulates and directs all the phenomena of the living being, with a view to the permanence of life in its activity and in its specific forms.

• ***In its specific forms? So you think that species do not vary, do not evolve?***

Yes, the living world really only shows us the constancy of species. In the book I have just mentioned, one of the chapters denounces everything that is pure hypothesis, illusion and even imposture in the all-too-famous theory of evolution, which has become a tyrannical dogma, weighing down true knowledge of life without the slightest proof or usefulness. At the beginning of this century, I myself was subjected, as a pupil, to the heavy straitjacket of evolutionist thinking, and after recognising, at the cost of a long investigation, how illusory and unjustified this myth was, I considered it my duty as a man of science to reveal without shyness what I had recognised as an error to be rejected.

• ***Apart from your books, have you spread your ideas in the form of conferences or lectures? articles?***

Yes, a man of science is naturally called upon to explain his theories to different audiences: On 1 June 1962, I gave a lecture at the Collège de France in Paris as part of a seminar organised by Professor Wolff on the problem of the germ line.

I have also published articles on various biologists, including Cl. Bernard, Darwin, L. Cuénot and Jean Rostand. A forthcoming book will bring together a dozen of these studies under the title Figures de biologistes.

• ***We've heard that you're as enthusiastic in your praise of these articles as you are biting in your criticism. Do you think this assessment is justified?***

Yes, certainly; I enjoy praising as much as criticising, but it's always the same thing. with a view to what I believe to be the highest truth.

• ***As a scientist, do you have a motto that sums up your thinking and inspiration? of your long scientific career?***

11 It would be rather presumptuous and conceited to claim to judge oneself by a personal motto: I am only a modest laboratory worker. But there is a phrase of Jean Rostand's that I would gladly adopt as an expression of my own scientific endeavour: "To know as much as others, but to know less"; those who claim to know everything seem to me to be at the antipodes of any honest and true science.

Interview by André GIOVANNI.