CONFLICTING VIEWS IN THE TAXONOMY
AND EVOLUTION OF FOSSIL HOMINIDS

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TWO TENDENCIES IN THE TAXONOMY

In the first decades of this century the authors of paleoanthropological description awarded almost every new fossil a generic or at least specific rank. In this way many denominations still in use have been created (Sinanthropus, Javananthropus etc.). Such designation seemed to be justified by an obvious clear difference in many characteristics between ancient and contemporary forms. However as early as in the thirties many fossils with intermediate features got known and brought about the necessity of a more precise nomenclature. A mighty push to the revision of the existing scheme was given by the conception of species based on the experimental genetics Th. Dobzhansky 1941, 1944). This tendency received its extreme expression in a scheme by G. Mayer (1944, 1950), which is reproduced here as a suitable example for critical examination.

Genus Homo

1. species. H. transvaalensis (Australopithecinae)
2. species. H. erectus (Pithecanthropus)
3. species. H. sapiens with many subdivisions including fossil and contemporaneous forms

Three taxonomical criteria have been made use of for grounding this conception:
1. absence of cytological reproductive isolation testified by unlimited fertility of crosses between the remotest groups of contemporary mankind (hybridological, or cytological criterion),
2. relatively young geological age of fossil hominids, insufficient for generic differentiation chronological criterion),
3. variability of groups partly overlapping one another (morphological criterion).
Let us examine these three criteria.

HYBRIDOLOGICAL CRITERION

Reproductive isolation is an essential attribute of all taxonomical unities, both great and small; a taxonomical subdivision exists so long as it remains isolated from other subdivisions.

Most modern species of land mammals have different areas of expansion (allopatric species). When the areas enlarge and partly coincide, geographical isolation ceases and hybrid forms arise, such as Martes martes and M. zibelina; hybrids of different species of genus Cittelus, Sciurus and many others (S. Ognev, 1949). In natural surrounding the hybrids as a rule do not supplant the initial species, but bred in zoological gardens they show their ability to propagate. In the state of domestication the crosses between two species of Cammelus occur. Poephagus gruniens and different species of Bos taurus and many others are successfully bred (S. Bogolubsky, 1959). Sympatric species are relatively rare in land mammals, their reproductive isolation is achieved by adaptation to different nishes and by physiological differentiation: by speciality of the visual or olfactorial receptions stimulating the sexual activity and its season (S. Serebrovsky, 1936).

Cytological differentiation of two species (in result of infringment in the processus of meiosis or synapsis) is understood as a sign of their divergence in remote time; this point of view may be quite correct, but there is no correspondence between the degrees of differentiation in cytological and morphological properties. Infertile (fully or partly) are hybrids of some similar forms (Lepus europaeus and L. timidus) and prolifique are many crosses between remote groups. In order of primates fertile interspecific hybrids arise easily. Biological Station (apes nursery) in Sukhumi (Caucasus) obtained prolifique crosses between such different species of Macaca as M. cyclopis (formosana), M. javanica, M. nemestrina (!) M. rhesus. In the genus Papio the hybrids between species (or subgenera) P. hamadryas, P. anubis, P. cynocephalus (Babuin) proved to be fertile (G. Lakin, 1949).

The rule of infertility of interspecific crosses was formulated in the period, when large circles of kindred forms was united in one species. In the last century the extent of species underwent a change (in the works of "splitters of species" and "species lumpers" as well). Most species of the Linneaus scheme are classified now as different genera (Ognev, 1942; Simpson, 1945, 1950). Such groups are in most cases separated cytologically, but not many modern species.

Large groups of kindred species differing geographically mostly in secondary external features have been named by Rensch "Artenkreis" which is equivalent to subgenus. Polytypic groups including forms which differ not only in external, but also in more important features have an evolutionary significance greater than that of a species. Such groups corresponds to the category of genus or subgenus, whatever the cytological divergence of the part of a polytypic group might be.

In general the hybridological (cytological) criterion is one of many criteria which characterize the process of evolution of related forms; and it acquires its full significance only in constellation with other data.

In studying the fossil form we obviously have no means to appreciate the degree of cytological isolation in a sequence of related forms. A sound basis for the taxonomy of fossils is given by the scale of morphological differences in contemporaneous families, genera and species of animals.

CHRONOLOGICAL CRITERION

The contemporary mammalian families in their earliest fossil forms appear in the miocene period, the modern genera in the early pleistocene and the species in latter pleistocene time.

The separation of hominid and simiid branches took place as stated by most morphologists, in the miocene period (H e b e r e r, 1956) but the remains of these oldest fossils are not found and the authentical traces of modern human type belong to the final pleistocene period. The absence of clearly distinguishable contemporaneous human variety in layers of an earlier period leads some anthropologists to conclude that the ancestors of Homo sapiens were indistinguishable from middle pleistocene hominids and that there was only one genus in the hominid line — the Homo.

This argument is not convincing either morphologically (this will be discussed later) or from the evolutionary point of view: the tempo of evolutionary transformation depending on various factors vary marquedly.

In the evolution of the family Equidae, in the course of 45 million years 8 different genera are distinguishable, 4 of them lay in the direct ancestral line of the present genus Equus. This type of evolution, about 6 millions years for one genus, must be called bradythelic. We may suppose the pressure of selection (adaptation to the movement on the solid ground, to the food consisting of grass) operated slowly. The reinforcement of zeugopodium length, increase of crown height of molars were leading to a distinct change only in the course of a long sequence of generations.

G. S i m p s o n gives an example of another evolutional type: in some groups of Cervidae, Canidae and other mammalian families, which penetrated from North America in the Southern Continent 1—2 millions years ago, new genera have arisen. New forms differ from the ancestral types both in features of one level (horizontal differentiation or "Radiation") and partly in symptoms-characteristic of the given family (vertical differentiation or phyliation). This mode of evolution may be called "mesothelic", intermediate between the bradythelic and "tachythelic" modes. The latter arise when the selection pressure operates more strongly, which was in no way typical of mammals that have immigrated into South America from the northern continent.

In certains conditions when the acting stimulus acquires great intensity and modification of structure in foregoing periods has attained a needed level, a rapid qualitative transformation of separate features or their fixation as an integral new type, occurs. Simpson called this mode of transformation "the evolution by quants".

The evolution of Hominids in various periods proceeded differently.

The early representatives of simiids and hominids families are unknown paleontologically, but morphologically the chief point of divergence of two groups consisted in their mode of locomotion: pongidae conserved the neutral primate type of progression, the hominid developed the orthograd bipedalism: transformation of foot in an organ fit for erect walking, lengthening of the lower extremities. Skeletal modifications were supplemented by a change in dental structure, by a greater development of brain lobes, by the beginning of differentiation of the vocal organ, by conversion of sticks, shells, stones found in the immediate surroundings, in the objects indispensable for living.

Remains of the oldest (till yet known) hominids together with pebbles bearing traces of having been used by man, were found in Olduvai Gorge (Tanganyika) in the beginning of the sixties by Leakey. In the walls of the gorge five horizonts were distinguished, the Bed I being the oldest. The Bed II fossil, previously called "Zinjanthropus" owing to oversized molars, relatively small canines, small skull capacity, sagittal crest on the cranial vault together with great geological age is now reffered by most anthropologists (von K ö n i g s w a l d, 1965, T o b i a s, 1965) to the australopithecinae, to their special form, approaching partly the Modjokkerto fossil of pithecanthropic group. The artifacts could not have belonged to Zinjanthropus boissei, or to any australopithecinae form (leaving aside the question of the Telanthropus and its place in the systematic of ancient hominids). R o b i n s o n and many other paleoanthropologists rule out the possibility of australopithecinae to work on stone though they do not deny their ability to use different objects including stones.

The fossil of the Bed I called "prezinjanthropus" is much older than the former. The bones of the hand and the foot of the oldest fossil are of undoubtedly hominid (euhominid) type. Dimensions of the lower jaw and of the molars are greater than in Zinjanthropus, approaching the type of Meganthropus of Java, but some other features of the lower jaw, the skull capacity amounting to 680 ccm and the geological age — villafranchian period — distinguish the Bed I fossil both from the australopithecinae and pitecanthropine groups (P. T o b i a s, 1965, von K ö n i g s w a l d, 1965, L. L e a k e y and M. L e a k e y, 1965). It is not quite clear to whom belonged the stone artefacts in Olduvai Gorge, but the probability for a creature like the Bed I fossil to chip off some parts of

* A systematic study of early stages of hominisation is given by the present author in his works of 1955, 1962, 1965.

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a stone could not be denied. The existence in early villafranchian period (1,700 million years of absolute chronological age I. I v a n o v a, 1965) of a hominid variety which differed both from australopithecinae and pithecanthropinae is very likely, though we can't affirm that the fossil Olduvai Bed I is representative of this type. This fossil recieved the name Homo habilis. Neither chronological nor morphological features of the Bed I fossil agree with such a diagnosis. The early villafranchian hominid ought to be classified as a representative of a separate genus or subgenus in the human line of evolution (Olduvanthropus?).

The second old fossil hominid was discovered in Java, in Modjokkerto, in the layers of the first glacial period and has according to potassium-argon dating the absolute age of 600 thousand years (I. I v a n o v a). The Modjokkerto fossil and similar forms were referred to a separate genus Pithecanthropus, a diagnosis fully confirmed by the morphological and chronological facts in spite of the preconcieved notion of some investigators.

The contemporaneous hominid genus appears in Europe in its fossil but indisputable form for the first time in the layers of the I II stage of the last glaciation together with implements of the szeletian, gravetian and aurignacian cultures. The absolute chronological age of the early upper paleolithic cultures coincides with the oldest forms of the genus Homo sapiens and amounts to 38 thousand years — the sites Radoshiná, Czechoslovakia. "Netoperz" (Poland, I. I v a n o v a, 1965).

The I/II interstadial of the last glaciation is separated from the first glaciation (time of Pithecanthropus Modjokkerto) by half a million years, which points the tachythelic mode of evolution. Indeed the tempo of the formation of new human types could hardly be slower: the great role of the developing speech faculty surely intensified the pressure of selection.

The preceding period, from the first pebble tools to the Pithecanthropus epoch, embracing more than one million years is rather mesothelic. and the initial period is clearly bradythelic.

The formation of a typical sapiens variety of genus Homo continued during the II and III stages of the last glaciation. For this period and for the final part of the preceeding epoch the evolution by quants seems to be characteristic.

Some attempts were made to find quantitative measure of the evolution tempo in hominids. The changes of mean values of craniological diameters and indices in consecutive chronological groups were calculated. The results depend upon the composition of the group, on the relative number of varieties which did not belong to the Homo sapiens line of evolution or developed unevenly in separate symptoms. The biological significance of the proposed quantitative characteristics is very limited.

The so-called "classical Neanderthalians" and their mousterian culture appeared in Europe during the late first stage of the last glaciation, existed in Würm I/II and disappeared in Würm II (according to the scheme for Central Europe). In the course of I—II and II stages of Würmian glaciation the mousterian Neanderthalians and early upper paleolithic hominids existed simultaneously, but not the somewhat earlier appearence of classical neanderthalians (chapellian type), nor their absence in last würmian period can be interpreted as a result of transformation of the chapellians in the upper paleolithic hominids. Though the genetical connection of mousterian and several upper paleolithic cultures is now largely recognized (G r i g o r i e v. 1965) the hypothesis of transition of the chapellian type in the aurignacian variety is not reconciliable with either the chronological or with the morphological facts. The rapidly growing upper paleolithic populations absorbed or forced out the small dispersed groups of the chapellians.

Neanderthalians in their late classical (or chapellian) form are determined by most of the anthropologists as a species of genus Homo. There have been proposed other taxonomical diagnoses: a species of genus Pithecanthropus (G. D e b e t z. 1948, a separate genus M a c - C o w n and K e i t h (1939, 1950) a subgenus of Homo (N e s t u r k. 1941).

The chapellian neanderthalians as well as the upper paleolithic hominids, are separated from the pithecanthropus time by a period of a half million years a lapse of time which is quite sufficient under certain condition for differentiation of separate genus or at least subgenus. What shows morphological comparision of the late pleistocene fossils?

MORPHOLOGICAL CRITERION

For convenience sake we divide the varying characteristics into four groups.

1. Features which characterize the level of organisation, as, for instance, a heart consisting of four chambers, heterodontism development of prosencephalon etc.

2. Features which characterize the general type of adaptation, for instance structures of extremities. teeth and other organs, adapted to rapid movement and carnivory diet.

3. Features which characterize the level of specialisation in a given direction: relative length of extremities, pecularities of basipodium structure etc.

4. Features which characterize the external attributs (pigmentation, skin appendages, horns) or secondary structures not affecting the level of specialisation or general adaptation.

The first three groups of features arise in determined sequence which characterizes the phyletical relation of forms and their belonging to the same or to different class, order, family, genus. In the process of "filiation" the groups occupy different levels in structural organisation and in the time scale (vertical division). If the forms which have arisen by divergent evolution during one chrono-

logical period differ in the level of specialisation, they also represent different supraspecific categories.

In contradistinction to the above named categories the varieties differing in external attributes or in some features of second order arise in the process of "speciation" in the limits of one structural level and one geological subdivision. Such varieties constitute mostly "geographical" species: when the forms of adjacent geological layers differ in the limits of one structural level, "chronological" species are distinguishable; and when analogous differencies for instance in the value of an orbital index are found in the two groups, these groups represent separate subspecies or species depending on the nature of the varying features. (Somewhat different definition of morpho-, chrono- and geospecies is given by George, 1958.)

In the evolution of hominids the fossils of each great time division, — the Oldovan type, the Modjokkerto (Pithecanthropus), Chapellian neanderthals. Upper paleolithic groups — represent different levels of the formation of features characteristic for human family. Therefore these types constitute morphologically as well as chronologically different taxons of no less than generic categories.

The greatest discord stirs the taxonomical definition of the classical neanderthalian type.

Sir Le Gros Clark includes neanderthals in the genus Homo as a separate species and gives a morphological definition of genus embracing both species. The author mentions: the occipital condyles situated approximately in the middle of the cranial length axis, temporal ridges never reaching the midline. the first lower premolar with a much reduced lingual cusp and so forth (Le Gros Clark, 1955, p. 79).

In this diagnosis the negative characteristics prevail. positive common features are scanty and not always sufficiently discriminating the genus Homo from the others. The description leaves unclear why many fossils of the prewürmian period could not be included in the Pithecanthropus group. A form typical for the genus as a whole is lacking, it becomes an abstract conventional contents, which is not characteristic for most genera of primates.

The chapellian type has cranial capacity not lower than the aurignac variety but this similarity does not bring two groups nearer; on the contrary the construction of endo- and exocranium is quite different and alienate two types from each other. The angularity of occiput, the development of supraorbital ridges and especially of the ophrionic groove. the mandibular sagittal profile almost vertical, but without traces of mental tubercle, many other features of the facial skeleton and the endocranium show that classical neanderthals are not a territorial variety of genus Homo, but a form which differs in the level and direction of evolution and therefore represents not a morphospecies but a separate taxon of higher order — genus or subgenus.

We meet no less difficulty if we try to include the neanderthalian group as a species in the genus Pithecanthropus.

In practice the neanderthalian type is described in most text books as a separate type and not as a subdivision of genera Homo or Pithecanthropus (J. Piveteau, 1957).

As in all series of related forms the variation of singular features overlaps the limits of species and even genera, the transgressive variability is by no means invalidating the accepted taxonomical methods.

It is known that even the chimpanzee and the man differ in some dental characteristics only in frequency of some combination.

The so called early neanderthalian group includes all European forms of the prewürmian time. The most ancient — fossils from Steinheim and Swanscombe — date from Mindel glaciation or Mindel-Riss Interglacial. and are almost synchronic with Thou-Kou-Tien Sinanthropus. To the Riss Würm Interglacial belong such fossils as Saccopastore, Ehringsdorf and many others. The morphological features of the prewürmian group do not form an integrity and (compared with the würmian fossils) lead to suppose in the middle pleistocene the presence of two components analogous to the latter forms.

H. Vallois found that two the most ancient fossils, Steinheim and Swanscombe, differed in the same way which characterizes the divergence between the chapellian and aurignacean types. The Steinheim variety, continued by the later Montmaurin, Krapina, Ehringsdorf and others lead to the chapellian type, Swanscombe and Fontechvade belong to the precursor of the aurignacean hominids. The first prewürmian group received the name "preneanderthalians" the second — "presapiens".

Prof. Vallois (1958) opinion was met with many objections. Prof. Breitinger (1955, 1957) made a series of cranial contour superpositions and affirmed, the pecularities of the Swanscombe fragment do not surpass the limits of variability in the limits of prewürmian group taken as a whole. The discussion concerned chiefly the structure of the supraorbital region which was unfortunately missing in both alleged presapiens fragments. Perhaps more important is the fact that on the base of available data it is impossible to draw the demarcation line between the preneanderthals and presapiens groups either chronologically or geographically (Sergi S., 1953. 1962; Howell, 1951; Schaefer, 1959).

The above discussion confirms demonstratively the great heterogeneity of the early neanderthals. The indices of the cranial vault heigh, of the position of the greatest transversal axis, the occipital contour, position of malar bones. the development of supraorbital region, the construction of the upper and the lower jaw, in some specimens differ very little from the sinanthropic type, in other fossils approach almost the level of the upper paleolithic types. For many features of the chapellian and aurignacean type we can find analogous variations

in early neanderthals. But it is remarkable that several archaic (sinanthropic) and progressive features appear in the prewürmian fossils uncorrelated and create a great diversity of combinations (V. B u n a k, 1959). The variations are not connected with any territorial or chronological subdivisions. The polymorphism in the prewürmian series is greater than in any other known species. The group corresponds most of all to an "Formenkreis" of zoosystematics. The prewürmian group of variations is often given the name "ehrinsdorfensis" after one fossil typical of the whole group. Circulus varietatum Ehringsdorfensis may be included with equal right in both the genus Homo and in the genus (or subgenus) "Neanderthalianthropus", because the chapellian Neanderthals differ from the "early neanderthals", taken as a whole, not less, than the later deviates from the aurignacean type.

PHYLETICAL RELATIONS OF EUROPEAN FOSSIL TYPES

If it is really impossible to distinguish two or more genealogical lines and if the division of the chapellian and aurignacean types proceeded in the beginning of würmian glaciation, we have to discuss the factors which lead to an outburst of variability and its bipolar direction in the Würm interstadial I—II. It is essential that many features characteristic for each of the late pleistocene types are recognisable in prewürmian fossils in similar form. There are variants with small bipartite supraorbital ridges and forms with almost entire torus and an ophrionic groove; torus occipitalis is developed in some fossils and absent in the others, index of cranial height vary from very low value till the variant reaching the level of the upper paleolithic types.

The feature distinguishing the chapellian and the aurignacean types seem to have been formed already in the middle pleistocene. The upper pleistocene was a period, when the already existing features consolidated, formed two different complexes. The process of consolidation developed swiftly, it lasted from the beginning of the last glaciation (70—60 thousand years) partly somewhat earlier till the end of the pleistocene period (15 thousands year — the fossils of the magdalenian period). This process is an example of evolution by quants prepared by the foregoing transformation of structurale elements and stimulated by the increasing pressure of selection. We have to look for the factors which directed the process of consolidation of the early sapiens type in the change of economy and clan structure. Their development in upper paleolithic period required more perfect faculty of conceptual thinking and speech with corresponding structure of the brain and endocranium as well as of other skeletal parts (V. B u n a k, 1952). The individuals which possessed a complex of progressive features in the exocranium, in the construction of the lower jaw and in the chin

region were surely in favourable conditions and constituted the kernel of the Homo sapiens type. The accomplished contemporaneous type appeared not earlier than in the end of the pleistocene; even the relatively late magdalenian form and all others display in their structure especially in the endocranium many features of the prewürmian group. Such varieties as Cro-Magnon, Combe Capelle, and Oberkassel remain fully in the group of Homo (or Homo Sapiens) fossilis.

Rich paleoanthropological material of the period Würm I—II was obtained in Czechoslovakia. The former authors divided the fossils of this period in group of transitional form (Brünn and other) and typical Homo sapiens fossilis (Mladeč). The works of J. J e l í n e k have shown, that different fossils beginning with the oldest (Šipka, Ochoz) and ending with the more recent (Brno II, Předmostí) constitute one series of varieties in the stage of sapientation. The oldest forms display more primitive features but they possess many symptoms of progressive structure and do not go beyond the limits of the Sapiens fossilis group.

It remains doubtfull whether some fossils from Palestine (Skhul V.) can be included in the fossil variety of sapient group. The palestinian progressive variants do not compose an entire group, but in the oposite case to the moravian series appear in singular specimens coexisting with varieties of an other level. In the oposite case to the upper paleolithic group the chapellian type compared to early neanderthalians, shows a reinforcement of archaic features. Morphologically this difference can be characterized as a shift in the direction of "desapientation" though we can't name the immediate ancestors of the chapellian variety. We may suppose that the communities of chapellians remained small, their economy and social organisation underwent only insignificant changes and did not require any essential transformation of the brain structure and speech functions, which became necessary in larger groups. The augmented physical force and endurance satisfied the needs of small dispersed populations. The development of the chapellian type continued the old trend in the evolution — a quantitative increase of physical strength without transformation of the structure.

It is equally plausible that the consolidation of the chapellian type proceeded in those parts of the territory of prewürmian hominids where the concentration of progressive morphological features proved to be relatively low.

In any way the chapellians were a short phenomenon in the evolution of hominids, — it existed some 30—40 thousands years (from 60 to 25 thousands years B. C.).

Many features of chapellian and upper paleolithic (Sapiens fossilis) types are represented by not very different variants in Sinanthropus series. If we try to reconstruct on morphological ground an ancestral complex common for genera (or subgenera) Neanderthal and Homo, we come to a type which differs little from the sinanthropic group (V. B u n a k, 1959). The Sinanthrops of Pekin

region correspond well to our idea on the late form of the genus Pithecanthropus. a form almost identical with the feminine variety of Java (Pithecanthropus I and II) and somewhat different from older specimen — Modjokkerto. It is likely that besides the pithecanthropine line there were some others among the fossil forms of pleistocene of Java. A detailed study of small remains of dentition and mandibular fragments have led the investigators to somewhat different diagnosis of many fossils. The Gigantopithecus seems to represent a "parahomini" line of evolution (von K ö n i g s- w a l d. 1958) (perhaps also the Pithecanthropus IV?).

The australopithecinae group surely do not belong to the pongid family, and hardly can belong to the direct hominine line, if one takes into consideration a number of divergent features, including such peculiarities as the construction of the nasal region. We have to wait for more exact material of the found fossils to decide whether there were two coexistent but separated line — australopithecinae and euhominidae, or whether among some of them there existed a phyletical relation.

THE NON-EUROPEAN FOSSIL HOMINIDS AND THE PROBLEM OF PARALLEL EVOLUTION

. The African and Asiatic fossil hominids usually are included in the taxonomical group established for Europe. In the literature we find such terms as the H. Sapiens fossilis from Wadjak (Java). neanderthalian from Rhodesia. Pithecanthropus from Ternifine (Africa). Such-like nomenclature is correct. if all the subdivisions of one taxon are offshoots of one ancestral group which dispersed on the globe and brought about different but immediately linked varieties.

There is good reason to assume the integrity of different local forms of the group Pithecanthropus. This group stood higher than its forerunners, propagated more rapidly. could reach the remote parts of the yet not populated warm zone.

As to the neanderthalian form and upper paleolithic groups the genetical links among different territorial parts of each group are more remote and hardly justify the accepted taxonomy. The middle and late pleistocene fossils are offshoots of ancestral groups which have inhabited the same territory and have only remote connecting links with similar morphological varieties of other geographical areas.

These facts were pointed out for the first time by F. W e i d e n r e i c h. His view on the genetical connection between Wadjak and Ngandong, the "upper Cave" fossils and Sinanthrops on the one hand and the mongols on the other hand were not confirmed either by concrete morphological material nor by ethno-archeological facts. It is very probable that the ethnical groups of historical periods have incorporated the remains of paleolithic tribes but comparing the skeletal remains of consecutive periods for establishing their genetical relation is not sufficient. The works by C. C o o n

(1963) and by A. T h o m a (1962). though they brought much larger material. are by far not sufficient to describe the relation between the paleolithic and neolithic groups.

We get a more solid ground if we compare lower and upper paleolithic types which is also necessary for the study of the origine of the Homo (or H. sapiens) types. Such studies clearly show that the middle and late pleistocene forms are directly connected with the more ancient variety of the same territory.

The material which shows. that the european aurignacian varieties are linked with early neanderthals by many transitive forms has already been dealt with. The south african upper pleistocen Florisbad skull combines neanderthaloid and upper paleolithic features. The extremely long and narrow skulls from Elmenteita have an analogy in some older fossils from different african localities. Most anthropologists admit that the upper pleistocen Choukoutien skulls have some common features with Sinanthrops in their teeth structure. The Rodesian fossil possesses features of a specialised (desapientated) offshoot of a more neutral middle pleistocene african form like Kanjera (W e l l s. 1957; T o b i a s 1962). The north African fossils Tangier, and Haua Fteah resemble the pithecanthropine varieties Ternifine. Rabat.

The available material is scanty. but if it is correct the European, Asiatic. African neanderthal like fossils are not offshoots of one and the same ancestral group. as it is assumed in the usual terminology. The correct denominations should be: circuli varietatum "ehringsdorfensis". "rhodesiensis" etc.

Such-like denominations correspond to the genetical relations of the fossils of different continents. We come to another characteristic if we study the morphological features in different territorial fossil groups. The diversity of synchronous forms in each country is great, but the difference between two territories is not greater than it is within a country. As to the upper paleolithic skulls many of them give simillar sagittal and transversal profiles: the skulls from Keilor and Oberkassel. Combe Capelle and Choukoutien Upper Cave. Combe Capelle and Elmenteita (V. B u n a k. 1959). From the morphological point of view different territorial varieties could be included in one taxon (V. B u n a k. 1959).

The great structural similarity. despite a different degree of kinship comes about as a result of a parallel and even convergent trend of evolution which prooved to have been stronger than the foregoing differentiation.

The chief mooving factor in the development of paleolithic hominids was the increasing use of objects for living and the intensifying function of speech and intellect. Under the influence of this factors one single trend of evolution remained possible: development of the structure and function of the brain. corresponding changes in the outer configuration of the skull in the lightening of its structure (V. B u n a k. 1953). The orthogenetic trend in the last phases of human evolution was

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declared irrational by some anthropologists. Really it is not characteristic of the process of speciation, adaptation to different local environmental conditions which is displayed mostly in pigmentation and other exterior features. The evolution we are studying is not "speciation", it is a continued process of formation of higher taxonomic categories which manifested itself also in ontogenesis (V l č e k, 1964).

Which of the two taxonomical scheme should be given the preference to? Many anthropologists avoid answering this difficult question and accept the division of fossil hominids in groups corresponding to the achieved stage of their development: propithecanthropi. pithecanthropi etc. Perhaps it is the best issue, but we need peculiar denomination of stages in order to avoid the confusion of different notions. The most used designation of stages are: Protanthropus. early and late. Archanthropus. Paleoanthropus. Neoanthropus. The subdivisions of the paleoanthropus groups — circulus varietatum ehringsdorfensis. rhodesiensis, indicates that we distinguish forms of approximately one stage of development. but differing in their kinship.

With the development of science the relative and sometimes absolute characterisation of a fossil changes and so demands a change in the taxonomical definition and denomination. Only few zoological definition of Linnaeus time are now used. A too formal understanding of the law of priority in nomenclature does not contribute to the advance of the fossil man study though the indication of the synomic terms remains obligatory.

In conclusion of this communication it is necessary to add a short remark on the relation of the fossil and contemporaneous types. As a rule the modern races of mankind are in one way or another linked with paleolithic populations of the same territory. unfortunately the available data on the persistance of few ancient features (principally in teeth structure) are not incontestable. The enumeration of ancient varieties of a given territory does not mean that all these varieties took equal part in the formation of the modern type. We have already mentioned that upper paleolithic types are in many cases identical in very remote territories. Surely great variability in one territory and the resemblance between the territorially remote forms are due not to the migration of types but to their independent formation. In every country we can find varieties which resembles in separate characters the mongolian race (large face of Oberkassel) negroid and europoid types. In the upper paleolithic periods (with two—three exceptions) features of many types combined very differently. The consolidation of modern races proceed under the influence of different factors, much later in the neolithic time. in the period when the formation of the genus Homo was already achieved.

CONCLUSION

1. Denial of the existence of many genera in hominid evolution is inconsistent with the testi-

mony of skeletal remains and biological theory.

2. Many contemporary species are isolated geographically or physiologically but not cytologically. There is not enough correspondence between the cytological divergence and biomorphological difference. For the paleontological study the cytological taxonomical criterion is of no significance.

3. The pithecanthropus group and upper paleolithic fossils differ in the "level" of structure and therefore they cannot be refered to species of one genus (morphospecies or chronospecies). The time interval between the first appearance of typical representatives of two groups, — more than half a million years — is sufficient for the formation of two genera because the evolution of hominid varieties could not be other than tachythelic and of rapid changes by "quants".

4. There is reason to admit the existance of one separate genus in the early villafranchian period — about 1,700 thousand years in absolute chronology, though it has not been proved that the "Homo habilis" represents this type.

5. Two synchronous fossil groups of Würm periods I, I/II, II — the chapellian ("classic neanderthals") and aurignacean are formed by way of consolidation of separate features, which existed already in the prewürmian time. The factors which lead to rapid consolidation of features and its bipolar direction are discussed in the text.

The prewürmian european fossils include a great diversity of form which cannot be united in one taxonomical unity. This group corresponds to a supraspecific category "Formenkreis" — "Circulus varietatum" which could be given the denomination "Ehringsdorfensis" because this fossil skull clearly deviates from the type described by King and more elaborately by Schwalbe.

6. The European, South Asian, African neanderthallike types originated from local ancestral forms as well as the upper paleolithic hominides of different continents. The degree of genetical connection between different continental groups is not significant and they can not be united in one taxon (a species). Nevertheless the morphological similarity of different form is relatively great, therefore many anthropologists in order to avoid the arising difficulty prefer a denomination which characterises first of all the level of evolution uniting in one group different forms of one evolutional degree (approaching the contemporaneous type). This method is justified by the great parallelism or even convergence in the evolution of pleistocene hominids. But in this case particular denominations are needed. such as Archanthrops, Paleoanthrops. Neoanthrops, and a division in species is acceptable (Paleoanthropus rhodesiensis).

7. The upper paleolithic varieties of different territories are in many cases alike and combine features of different contemporaneous types, which in this period had not yet been formed. The consolidation of modern races proceeded later. mostly in neolithic times under the influence of a number of factors.

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