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THE DATE OF SOUTH-WEST ASIAN NEANDERTALS

by

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The presence of anatomicaly modern humans in the archaeological contexts of Mousterian in Western Asia was already recognized during the excavations of Mt. Carmel caves in the 1930's. Since then additional skeletal remains were uncovered in Qafzeh cave (Israel), Shanidar (Iraq), Amud cave and recently in Kebara cave (TRINKAUS, 1983, 1984; VANDERMEERSCH, 1981; BAR-YOSEF *et al.,* 1986). The anthropological observations indicate that two types of hominids existed during the first part of the Upper Pleistocene. One is often called early modern *Homo sapiens* or "Proto-Cromagnon" while the other is known as a "Neandertal" or "advanced Neandertal" *(Homo sapiens neandertalensis).*

The definition and dating of these West Asian human types are inseparable from the problem of the European Neandertals. While several scholars see a local phylogenetic evolution from European Neandertals to early modern humans (WOLPOFF, 1981) others prefer to interpret the archaeological-palaeontological situation as pointing to the replacement of the classic Neandertals by *Homo sapiens sapiens* (e.g. STRINGER *et al.*, 1984). Thus the European Neandertals are seen as a deviate in human evolution which mainly developed in Western Europe, possibly as an adaptation to the glacial cold climatic conditions (e.g. HOWELL, 1957; COON, 1962; HOWELLS, 1976; RAK, 1986). Neandertals evolved from at least the time of Emiliani Stages 6 and 7 (Riss III and II/III in French terminology). Their presence in Western Asia is apparently recorded from a later date. Thus, scholars who envisage a regional evolution from Neandertals to modern humans in South-West Asia, would place the Neandertals as early as the oldest assemblages of the Mousterian complex. Others see the possibility of a geochronological contemporaneity between the two types and would not discard the option that "Proto-Cromagnons" preceded the West Asian Neandertals. The association between the two human types with the same Mousterian industrial complex is recognized by all. Therefore, the dating of Western Asian hominids was and is a controversial issue due to uncertainties in the dating of the Mousterian sequence in this region (e.g. HOWELLS, 1976; JELINEK, 1981, 1982; VANDERMEERSCH, 1982; TRINKAUS, 1984). This situation is somewhat amended in recent years as the result of new excavations, U-series dates and a more precise palaeontological analyses of microvertebrate assemblages (SCHWARCZ *et al.*, 1980; BAR-YOSEF and VANDERMEERSCH, 1981; TCHERNOV, 1981, in press; ROE, 1983; BAR-YOSEF *et al.*, 1986).

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The archaeological sequence of the known South-West Asian Middle Palaeolithic sites began with the entity known as the "Acheulo-Yabrudian" (e.g. GARROD, 1962) recently re-defined as the "Mugharan Tradition" (JELINEK, 1981). The assemblages of the Acheulo-Yabrudian are characterized by varying frequencies of bifaces and flake scrapers. The basic blank production is non-Levallois. Scrapers were shaped on thick flakes which were resharpened during the time of their use. Thus the common types were the two-sided, convergent, rounded, transversal and déjeté (COPELAND and HOURS, 1983). Sites containing Acheulo-Yabrudian assemblages in El-Kown (Syria) and Zuttiyeh cave (Israel) were dates by U-series to 100 k yrs through 150 k yrs B.P. (SCHWARCZ *et al.*, 1980; HENNING and HOURS, 1982). Even if there are inherent uncertainties in the reliability of this dating method and especially with the results concerning this discussion (SCHWARCZ *et al.*, 1980), their agreement with the stratigraphic sequence is taken as supporting their early age. Finally, this archaeological entity provided the fragmentary Zuttiyeh skull (GISIS and BAR-YOSEF, 1974), which is an archaic *Homo sapiens* (VANDERMEERSCH, 1982) and has no Neandertaloid characteristics.

The Acheulo-Yabrudian entity is overlaid by the Mousterian of Levallois facies in several instances such as Tabun, Zuttiyeh, Bezez and Yabrud I rockshelter as well as in open-air sites in El-Kown. No Acheulo-Yabrudian occurrence is as yet known south of the Tabun Cave-Azraq basin (Jordan) line, thus leaving out the semi-arid region of Sinai, the Negev, southern Jordan as well as some more lush hilly areas of the Judean Hills and the Moab-Edom range in Jordan. This curious distribution of the Acheulo-Yabrudian, which transects the environmental belts of the Levant requires an explanation, but it is beyond the scope of this paper.

The dating of the Mousterian assemblages partially depends on their presence on the Lebanese transgressive shorelines (SANLAVILLE, 1981). It is the assignment of a specific shoreline to the "Last Interglacial" which is debated, particularly because Levantine environments are far removed from the detailed European sequences. However, the Enfean II transgression which contains the *Strombus bobonius* shells and is overlain by Mousterian assemblages, is radiometrically dated to around 90/93 k yrs B.P. but could be of somewhat earlier age, of about 115 k yrs B.P. (STEARNS and THURBER, 1967; SANLAVILLE, 1981; LEROI-GOURHAN, 1980). This corresponds to other Uranium-series dates of Mousterian age such as the travertines in Zuttiyeh cave (Galilee) and Ain Aqev (Negev) indicating an overall date of *ca.* 110/100 k yrs B.P. for the earliest Mousterian (SCHWARCZ *et al.*, 1980).

The archaeological subdivision of Levantine Mousterian sequence is often defined on the basis of the Tabun cave stratigraphy (GARROD and BATE, 1937; COPELAND, 1975; JELINEK, 1981). The lithic contents of the three major sedimentary units (Tabun D, C and B) are considered as representing both a developmental and chronological sequence. The industry of "Tabun D" (or Mousterian "phase 1") is characterized by blanks which were often removed from Levallois unipolar cores for blades and points. The "Tabun C" industry (or Mousterian "phase 2-3") is dominated by flakes struck from Levallois cores with radial preparation; however, triangular points occur as well. The "Tabun B" assemblage exhibits, according to COPELAND (1975), a combination of the two with unipolar and bipolar Levallois cores as well as those radially prepared. Thus points are commonly short and broad, flakes are thin, narrow and tend to be laminar.

This sequence received some support from the superpositioning of the Hummalian (a blade/point industry) over the Yabrudian in El-Kown (HOURS, 1982; COPELAND, 1985). Although the Hummalian is not a Levallois industry, its overall aspects resemble that of Abu Sif C (NEUVILLE, 1951) and the elongated points of Tabun D. The Hummalian in El-Kown is overlain by Mousterian assemblages, often referred to as "Levalloiso-

Mousterian" (COPELAND and HOURS, 1983).

The entire sequence from the Acheulo-Yabrudian through the Mousterian is seen by A. JELINEK as a developmental sequence exhibited by the decreasing W/Th ratio of blanks (JELINEK, 1981, 1982). It was thus offered also as a chronological sequence although it needs the support of both relative and absolute dating. For the time being the Mousterian sequence of Tabun Cave is still a unique case. Therefore, the dating of the phases within the Mousterian sequence, which lasted from *ca.* 110 k B.P. through 43/40 k B.P. (based on ^{14}C dates) remains the main issue when the hominids are concerned.

One relative dating method is offered by the microfaunal chronostratigraphy. It is based on the seriation of microvertebrate assemblages. Those which contain archaic forms of rodents are considered as older than assemblages with new species (TCHERNOV, 1981, 1984).

The basic asumption is that the birds of prey and mainly the Barn Owl *(Tito Alba)* predate opportunistically and thus randomly on available rodents in the environment and introduce them, in form of pellets into the cave sediment. Systematic observations by DOR (1947) and BRAIN (1982) tend to confirm this behavioural pattern. Thus the accumulation of rodent bones over time reflects both environmental changes caused mainly but not solely by climatic fluctuations. However, the more important aspect of these assemblages is the evidence for the disappearance of archaic species and the arrival of new ones. When the assemblages from various archaeological layers are seriated according to this principle (Fig. 1) they indicate (TCHERNOV, in press) that the early layers of Qafzeh cave in which the hominid burials were uncovered, cluster with the layers of Tabun F (Late Acheulian) and E (Acheulo-Yabrudian). The disappearance of the two African rats - *Mastomys batei* and *Arvicanthis ectos* - is taken with the previous extinction of *Allocricetus jesreelicus* , a cold steppe hamster, as marking a faunal break.

The later Mousterian assemblages provide the evidence for the arrival of *Cricetulus migratorius* the grey hamster and the evolution of the subspecies of *Myomimus roachi roachi* , a Euro-Asian dormouse. One of the faunal assemblages was derived from Tabun C where, according to Garrod's original observations, the burial of the woman was found. Its attribution to the Southwest Asian Neandertals is commonly accepted. Amud man, another Neandertal, is often related to this stage although its exact chronological position is unknown. The recently discovered Neandertal in Kebara Cave (BAR-YOSEF *et al.,* 1986) could possibly be assigned to the Tabun B industry and preliminary Thermoluminiscence readings tend to place it around 60,000 B.P. One may also include the more Neandertal types uncovered in the upper part of the Shanidar sequence (TRINKAUS, 1984).

If the ages given above to the various hominids are correct, then the Qafzeh group is the earliest in the Mousterian to be followed later by the Skhul hominids. The latter are geologically contemporary with the Neandertals (Amud man, the woman from Tabun and the Kebara baby and adult). Although this "contemporaneity" is often questioned by many scholars we should keep in mind that the Levant was actually a border zone. In North Africa and possibly Central Asia forms of archaic *Homo sapiens* prevailed while the European Neandertal populations dispersed eastward. In such an unstable frontier area as South-West Asia one must expect to find, in a diachronic study, the interdigitating remains of various populations.

Explaining human dispersion either in the form of gene flow or actual migration requires the discussion of two aspects: (a) What were the circumstances in the homeland range of this population which enabled or enforced such a move, and (b) what were the favouring conditions in the recipient region which made this dispersal possible.

Without discussing in details the evidence for palaeoenvironmental fluctuations in Western Europe during the "Wurm Ancien" (e.g. LAVILLE *et al.*, 1983) or Emiliani Stage 5 d-a, 4 and the early part of 3, it seems that the establishment of cold climate at the onset of Stage 4 *(ca.* 75/70 k B.P.) exerted harsh conditions on the existing Mousterian populations. The rapid expansion of continental and mountain glaciers with their periglacial fringing belts considerably reduced the territories available for Mousterian populations. The northernmost belt occupied in an earlier period turned into a "polar desert" and was abandoned (e.g. CORDY, 1984).

Given the Mousterian level of subsistence strategy (including technology, social organization, etc.) changes in adaptation within the tundra and steppic zones were inevitable. For example, a major change is exhibited in the faunal spectra of Combe Grenal (DELPECH and PRAT, 1980) where the red deer, horse and roe deer were replaced by reindeer, horse with much fewer bovids and red deer. Reindeer as an unpredictable source of food (BURCH, 1972) and the occasional high frequencies of horses, possibly enforced the reorientation in hunting and opportunistic scavenging techniques. It would not be surprising if such shifts required the intensification of social networks which could have been looser and more ephemeral during Stage 5 (115-75 k B.P.). Similar shifts in faunal spectra, although of a lesser degree, were observed in southern France (MEIGNEN, 1979).

The diminishing exploitable territories in the northern latitudes possibly increased the Mousterian population in the Mediterranean provinces and eventually led to their spread eastward (Fig. 2). The extended coastal plain, exposed by the retreating sea of Stage 4, facilitated human moves along the shores.

During Stage 4 the Levant still favoured a climatic amelioration. Many large inland lakes such as Lisan, Sirhan, El-Jaffr, Azraq, etc. testify for the expansion of the steppic Irano-Turanian belt into the deserts (ROBERTS, 1982). Moreover, the Mediterranean coastal range formed a continuous corridor from the Balkans to Anatolia and into the Levant. An alternative route was along the Black Sea and the Caspian with eventual passages into the Zagros or the Afganistan ranges.

If this scenario of geochronological and archaeological events can be further supported by additional radiometric dates than the causes and the timing of the arrival of Neandertals in Western Asia are satisfactorily resolved.

REFERENCES

BAR-YOSEF O. and B. VANDERMEERSCH, 1981. Notes concerning the possible age of the Mousterian layers in Qafzeh cave. *In* : J. Cauvin and P. Sanlaville (eds.), *Préhistoire du Levant,* CNRS, Paris, pp. 281-286.

BAR-YOSEF O., B. VANDERMEERSCH, B. ARENSBURG, P. GOLDBERG, H. LAVILLE, L. MEIGNEN, Y. RAK, E. TCHERNOV and A.M. TILLIER, 1986. New data concerning the origins of Modern Man in the Levant. *Current Anthropology.*

BRAIN C.K., 1982. *The Hunters or the Hunted ?* Chicago: University of Chicago Press.

BURCH E.S. Jr., 1972. The Caribou/Wild Reindeer as a human resource. *American Antiquity 37* : 339-368.

COON C.S., 1962. *The Origin of Races.* New York: A. Knopf.

COPELAND L., 1975. The Middle and Upper Palaeolithic of Lebanon and Syria in the light of recent research. *In* : Wendorf F. and A.E. Marks (eds.), *Problems in prehistory : North East Africa and the Levant* , SMU Press, Dallas, pp. 317-350.

COPELAND L., 1985. The pointed tools of Hummal Ia (El Kown, Syria). *Cahiers de l'Euphrate 4* : 177-190.

COPELAND L. and F. HOURS, 1981. La fin de l'Acheuléen et l'avènement du Paléolithique moyen en Syrie. *In* : J. Cauvin and P. Sanlaville (eds.), *Préhistoire du Levant,* Editions CNRS, Paris, pp. 225-238.

COPELAND L. and F. HOURS, 1983. Le Yabroudien d'El Kown (Syrie) et sa place dans le Paléolithique du Levant. *Paléorient* 9(1) : 21-38.

CORDY J.M., 1984. Evolution des faunes quaternaires en Belgique. *In* : D. Cahen and P. Haesaerts (eds.), *Peuples chasseurs de la Belgique préhistorique dans leur cadre naturel.* Bruxelles. Institut Royal des Sciences Naturelles de Belgique, pp. 67-78.

DOR M., 1947. Observations sur les micromammifères trouvés dans les pelotes de la Chouette effraye *(Tito alba)* en Palestine. *Mammalia* 10: 50-54.

DELPECH F. and F. PRAT, 1980. Les grands mammifères Pleistocène du Sud Ouest de la France. *In* : J. Chaline (ed.), *Problèmes de sratigraphie quaternaire en France et dans les pays limitrophes.* Supplément au *Bulletin de l'AFEQ*, n° 1: 268-297.

GARROD D.A.E., 1962. The Middle Palaeolithic of the Near East and the problem of Mount Carmel Man. *Journal of the Royal Anthropological Institute* 92: 232-259.

GARROD D.A.E. and D. BATE, 1937. *The Stone Age of Mount Carmel.* Clarendon Press, Oxford.

GISIS I. and O. BAR-YOSEF, 1974. New excavations in Zuttiyeh cave, Wadi Amud, Israel. *Paléorient* 2(1): 175-180.

HENNING G.J. and F. HOURS, 1982. Dates pour le passage entre l'Acheuléen et le Paléolithique Moyen à El Kown (Syrie). *Paléorient* 8 : 81-83.

HOURS F., 1982. Une nouvelle industrie en Syrie entre l'Acheuléen supérieur et le Levalloiso-Moustérien. *In: Archéologie en Levant: Recueil R. Saidah.* Maison de l'Orient, Lyon, pp. 33-46.

HOWELL F.C., 1957. The evolutionary significance of variation and varieties of "Neanderthal" man. *Quaterly Review of Biology* 32: 330-347.

HOWELLS W.W., 1976. Explaining Modern Man: Revolutionists *versus* Migrationists. *Journal of Human Evolution* 5 : 477-496.

JELINEK A.J., 1981. The Middle Palaeolithic in the southern Levant from the perspective of the Tabun Cave. *In* : J. Cauvin and P. Sanlaville(eds.), *Préhistoire du Levant,* CNRS, Paris, pp. 265-280.

JELINEK A.J., 1982. The Tabun Cave and Palaeolithic man in the Levant. *Science* 216 (4553): 1369-1375.

LEROI-GOURHAN Arl., 1980. Les analyses polliniques au Moyen Orient. *Paléorient* 6 : 79-91.

LAVILLE H., J.L. TURON, J.P. TEXIER, J.P. RAYNAL, F. DELPECH, M.M. PAQUEREAU, F. PRAT and A. DEBENATH, 1983. Histoire paléoclimatique de l'Aquitaine et du Golfe de Gascogne au Pleistocène supérieur depuis le dernier interglaciaire. *In:* A. Klingebiel (ed.), *Paléoclimats,* Editions

CNRS Paris, pp. 219-241.

MEIGNEN L., 1979. Le Paléolithique moyen en Languedoc oriental. *Ecole Antique de Nîmes Bulletin Annuel* N.s. 14: 27-39.

NEUVILLE R., 1951. *Le Paléolithique et le Mésolithique du Désert de Judée.* Archives de l'Institut de Paléontologie Humaine, Masson, Paris, Mémoire 24.

ROBERTS N., 1982. Lake levels as an indicator of Near Eastern Palaeoclimates: A preliminary appraisal. *In* : J.L. Bintliff and W. Van Zeist (eds.), *Palaeoclimates, Palaeoenvironments and Human Communities in the Eastern Mediterranean Region in Later Prehistory*, BAR International Series 133: 235-267.

ROE D. (ed.), 1983. *Adlun in the Stone Age* , The excavations of D.A.E. Garrod in Lebanon, 1958-1963. BAR International Series 159.

RAK Y., 1986. The Neandertal: A new look at an old face. *Journal of Human Evolution* 15 : 151-164.

SANLAVILLE P., 1981. Stratigraphie et chronologie du Quaternaire marin du Levant. *In* : J. Cauvin and P. Sanlaville (eds.), *Préhistoire du Levant,* CNRS, Paris, pp. 21-32.

SCHWARCZ H.P., P. GOLDBERG and B. BLACKWELL, 1980. Uranium series dating of archaeological sites in Israel. *Journal of Earth Sciences* 29 : 157-165.

STEARNS C.E. and D.C. THURBER, 1967. The Th230/U234 dates of the Late Pleistocene marine fossils from the Mediterranean and Maroccan littoral. *Progress in Oceanography* 4 : 293-305.

TCHERNOV E., 1981. The biostratigraphy of the Middle East. *In* : J. Cauvin and P. Sanlaville (eds.), *Préhistoire du Levant,* CNRS, Paris, pp. 67-98.

TCHERNOV E., 1984. Faunal turnover and extinction rate in the Levant. *In* : P.S. Martin and R.G. Klein (eds.), *Quaternary Extinctions* , The University of Arizona Press: Tuscon, pp. 528-552.

TCHERNOV E., in press. The succession of Mousterian Faunas in the southern Levant. *In* : O. Bar-Yosef and B. Vandermeersch (eds.), *A Mousterian Burial from Kebara Cave, Mt. Carmel.*

TRINKAUS E., 1983. *Schanidar Neandertals.* Academic Press, New York.

TRINKAUS E., 1984. Western Asia. *In* : F.H. Smith and F. Spencer (eds.), *The Origins of Modern Humans: A world survey of the fossil evidence.* Alan R. Liss, New York, pp. 251-293.

VANDERMEERSCH B., 1981. *Les Hommes fossiles de Qafzeh (Israël).* CNRS, Paris.

VANDERMEERSCH B., 1982. The first *Homo sapiens sapiens* in the Near East. *In* : A. Ronen (ed.), *The Transition from the Lower to the Middle Palaeolithic and the Origin of Modern Man,* BAR International Series 151: 297-300.

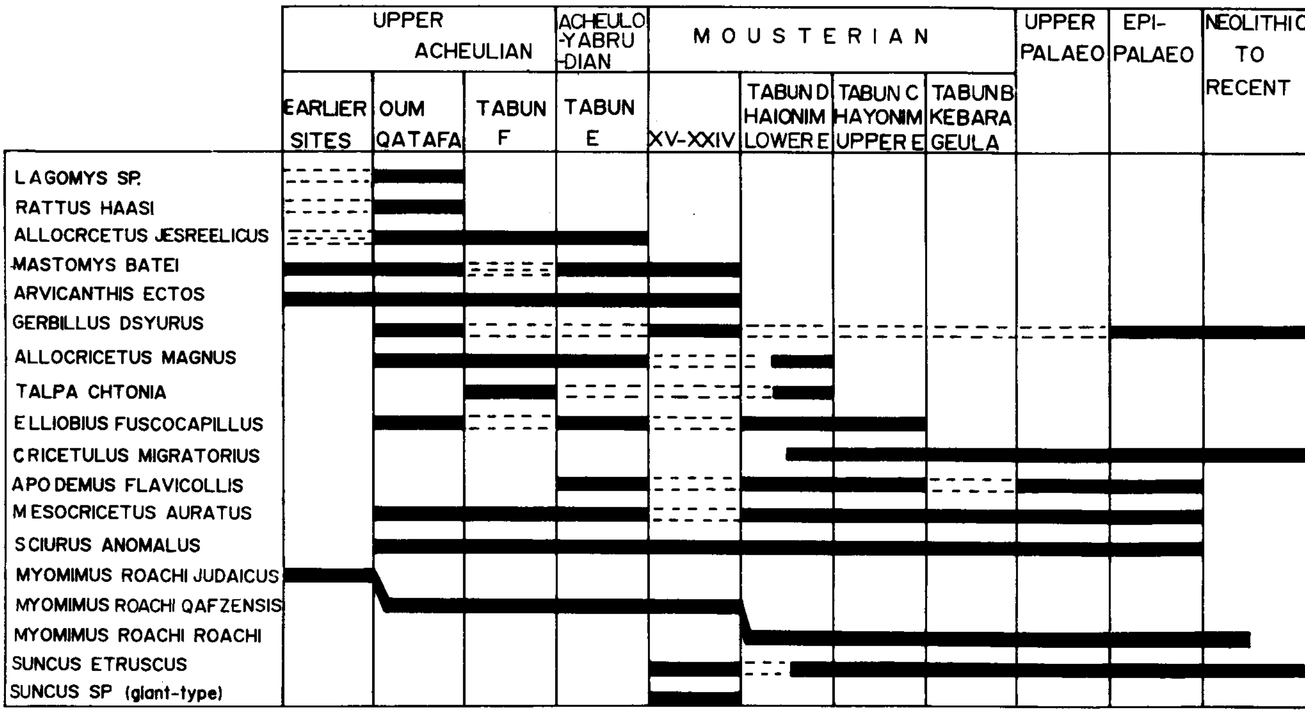

FIGURE 1

The date of the SW Asian Neandertals

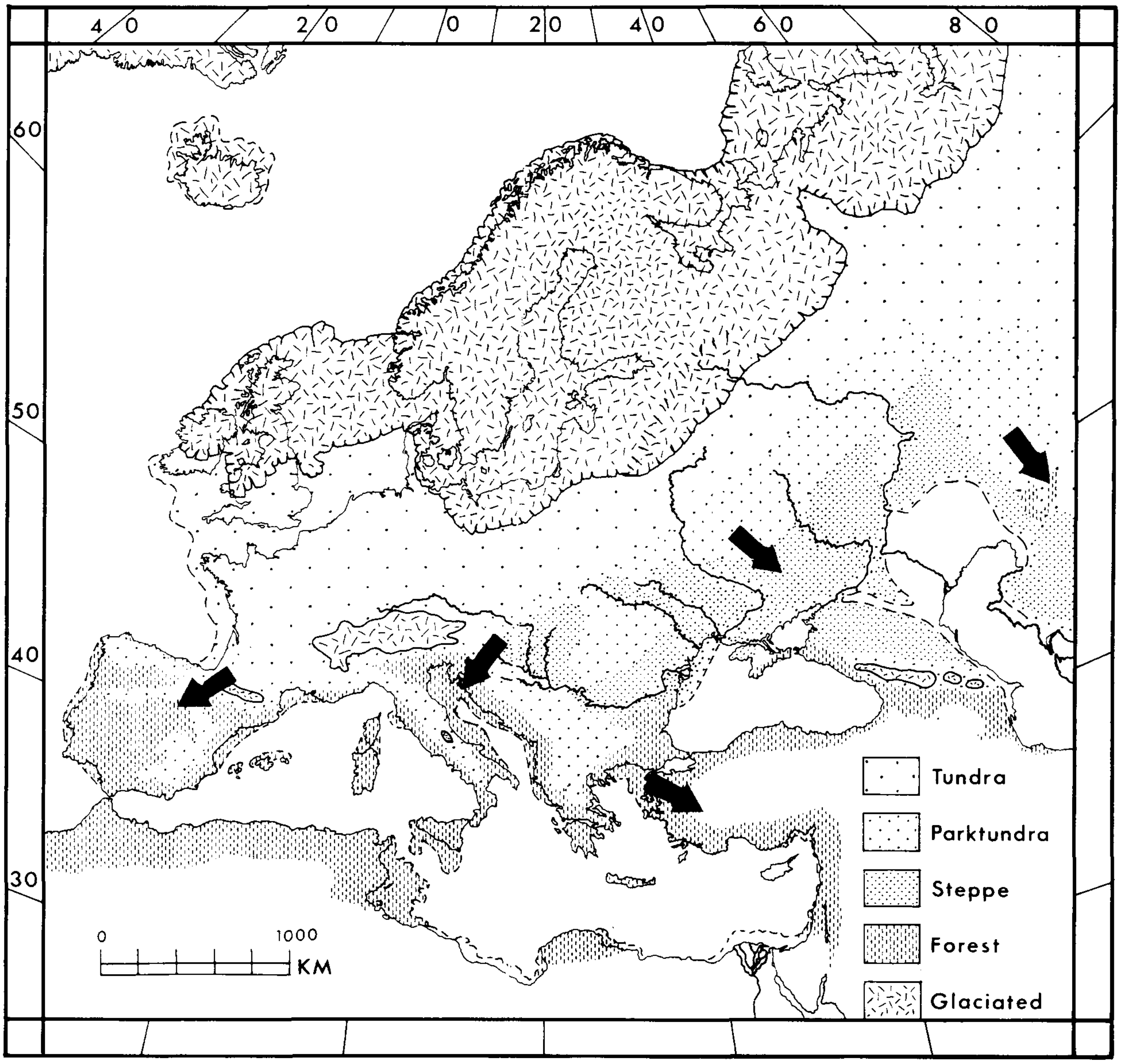

FIGURE 2

A map of Europe indicating the environmental stress caused by the onset of Stage 4 and possible directions for movement of human populations.