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A RE-EXAMINATION OF THE KEDUNG BRUBUS MANDIBLE

by

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With one text-figure and one plate

During a visit to the Rijksmuseum van Natuurlijke Historie in Leiden in July 1964, Dr D. A. Hooijer kindly allowed me to re-examine the mandibular fragment which had been discovered by Eugène Dubois on 24 November 1890 at Kedung Brubus, a fossil locality in the Kendeng Beds in Central Java (Dubois, 1891a, 1891b, 1924a, 1924b). As a result of a possibly important new point which emerged during my examination of the specimen, Dr Hooijer urged me to place my observations and their implications on record. It is the purpose of this short paper to do so.

Brief historical synopsis

In his original two notes of 1891, Dubois clearly recognized the fragment as belonging to "*Homo* spec. indet." He drew attention to the poor chin development and the curious flattening and hollowing of the inner surface, which he attributed to the attachment of the Musculus digastricus. On this basis, he spoke of the fragment as representing "...eene andere en waarschijnlijk lagere type dan eenige die men kent" (1891a).

Thirty-three years later, Dubois described (1924a) and beautifully illustrated (1924b) the little jaw fragment. At this time he definitely associated it with the Trinil hominid fossils and regarded it as part of the hypodigm of *Pithecanthropus erectus*. A passing reference was made to this "very peculiar human mandible" in the course of his description of the Giant Pangolin of the Kendeng fauna (Dubois, 1926), while the description and illustrations were repeated in Dubois (1938). The mandible (or a cast) was studied by McGregor (1925), Weinert (1928) and Weidenreich (1936).

McGregor accepted it as a jaw of *P. erectus*; Weinert reserved judgment until definite *Pithecanthropus* mandibles should be discovered. Weidenreich, after stating, "...it is somewhat difficult to determine the real character of the specimen", concluded that the mandible might have belonged to *Pithecanthropus* or to the then newly-discovered "Neanderthal type of Java, *Javanthropus soloensis*". Later, Weidenreich (1945: 103-104) expressed doubts and pointed out that it seemed closer to modern man than to the Sangiran B mandible. However, he grouped it with the latter, though with reservations. Hooijer (1947) declared that its systematic position was still uncertain. Boule & Vallois (1957) referred to its "mutilated condition", whilst Coon (1963: 384-385) referred to it as "an inconsequential piece of mandible called Kedung Brubus", though he added, "as far as we can tell, it could easily have been part of a *Pithecanthropus* jaw". It is listed by Oakley (1964) as *Pithecanthropus erectus* and given a dating of c. 500,000 years B.P.

Brief description of the specimen

The specimen comprises a fragment of the right corpus mandibulae of a manifestly hominid lower jaw. Part of P_3 and the tip of the root of the canine are in position. The distal face of the canine alveolus is preserved to the highest intact point of the C/P_3 interalveolar septum, while a small part of the mesial face of the alveolus for P_4 is intact. The anterior margin of the mental foramen is preserved: the foramen lies below the socket for P_4 and its centre is 13.4 mm from the lower margin of the mandible and about 11.4 mm from the estimated level of the upper edge. Virtually the entire height of the corpus is preserved between C and P_3. My measurement for this body height is 27.9 mm (that of Weinert was 27.8 mm and of Weidenreich, 27.5 mm). The maximum thickness at this point is 16.4 mm (or, for Weidenreich, about 16.5 mm), whereas the corresponding value given by Weinert is only 14.4 mm. The latter seems to be erroneous or a misprint, as several readings gave me a value the same as Weidenreich's and some 2.0 mm greater than Weinert's. My measurements give a robusticity index in this position of 59 per cent (or 60 per cent on Weidenreich's measurements). This is not the usual position at which the robusticity index is determined: the measurements are more commonly taken at M_1. Since mandibles thicken appreciably between the premolar and molar region and may, in addition, become somewhat deeper (but not usually shallower) as one passes posteriorly, it follows that the index in the region of M_1 would almost certainly have exceeded the value of 59-60 determined in the C/P_3 region. The indices

at M_1 for 10 Asian Middle Pleistocene adult hominids range from 47.2 to 66.7 (Tobias, 1966a). Clearly Kedung Brubus is an extremely robust mandible.

The age of the individual represented

The most surprising result of my re-examination of the mandibular fragment is the previously unsuspected conclusion that it is manifestly a j u v e n i l e mandible. A careful study of the stump of the premolar revealed two distinct areas on the buccal surface (pl. 1). The upper part is whiter, much eroded, pitted and rugose, and it ends below at a clear line which is concave occlusally; the buccal surface below that is yellowish, smooth, and strictly delimited by the afore-mentioned curved line. The upper white moiety seems clearly to be enamel and the curved line is probably the cervical enamel line. In other words, instead of the stump of P_3 being virtually all root — as Dubois and all other previous workers have thought — it is suggested here that it comprises a substantial portion of crown.

When one examines the position of the crown in relation to the jaw-bone, the lowest part of the presumed cervical enamel line is found to be 6.2 mm below the broken off highest point of the septum between the alveoli for the canine and P_3, or perhaps as much as 6.8 mm below the estimated highest point of this interalveolar septum. In other words, although it had emerged, this tooth was still in process of erupting! It is interesting that Dubois

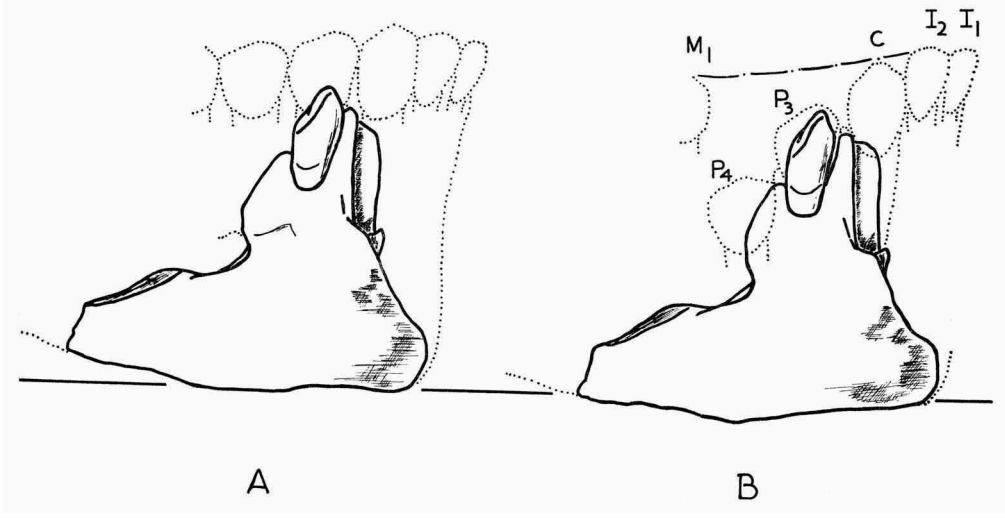

Fig. 1. Reconstruction of part of the Kedung Brubus mandibular fragment (A) by Dubois, 1924b; (B) by the present author on the basis of the mandible being that of a juvenile.

must have noticed the enamel line, because his (1924b and 1938) drawings clearly show a curved line in the correct position! Yet, he apparently did not appreciate the significance of the line and, in the reconstructed part of that drawing, he has drawn in an enamel line much higher up (fig. 1A).

The interpretation that much of the stump is dental crown receives support from the position of the lowest part of the pulp chamber: it is preserved fairly low down on the broken surface of the tooth as a narrow area connecting the buccal and lingual root canals.

The incomplete eruption of the P_3 indicates that the individual was a juvenile. According to the study of Hurme (1957), in both sexes the mandibular anterior premolar is the ninth tooth to emerge of the entire 16 maxillary and mandibular teeth. It is difficult to ascribe a precise age to the Kedung Brubus child, firstly because of variation in the time of emergence of this tooth within modern populations (the standard deviation of the mean emergence time is 1.47 yrs in Caucasoids, 1.46 and 1.67 yrs in Mongoloids — Hurme, 1957); secondly, there is evidence of some differences in the mean age of emergence among populations; thirdly, the applicability of modern standards to fossil hominids is problematical; and fourthly, it is difficult to estimate by what further lapse of time the Kedung Brubus P_3 would have been fully erupted. For all these reasons, the following references to modern standards can, at most, give a rough guide to the range of possible ages of the child. In mean emergence times, four male and four female modern series range from 9.7 to 10.82, the female series being 0.60-0.64 yr ahead of the corresponding male series. The 95 per cent range of emergence times for this tooth has been given by Hurme (1957): this range corresponds rather closely with the plus and minus limits of two standard deviations from the mean. For Caucasoid boys, the range is 7.94-13.70 yrs and for Caucasoid girls, 7.30-13.06 yrs. This gives an approximate idea of the range of ages, within which our Kedung Brubus child might have fallen.

The mandibular canine usually emerges before P_3 in both sexes: thus it is most commonly the eighth of the 16 teeth to emerge in boys and the seventh in girls. From this it is likely that the Kedung Brubus canine would have been ahead of the P_3 in eruption stage. On the other hand, the mandibular posterior premolar (P_4) is usually the eleventh tooth to emerge, P_3 being commonly the ninth. It follows that P_4 in Kedung Brubus is unlikely to have emerged yet: this is in keeping with the low position of the preserved part of the alveolus of P_4.

On this basis, it is possible to offer a new reconstruction of the fore-part of the mandible, alongside a copy of Dubois's original drawing and reconstruction (fig 1B). This new reconstruction corresponds almost exactly with

the radiograph of the left mandibular dentition of a child of 8¾ years shown in fig. 58 (p. 49) of Ingram's (1950) work on "The radiology of the teeth and jaws".

In this new reconstruction, the missing parts of P_3 have been restored in dotted lines: these missing parts appear to have been cut, chopped or bitten off the original tooth, there being three distinct facets on the crown stump, one mesial and two distal (plate 1). Between them, these three cuts or blows have removed most of the mesiodistally expanded part of the crown, also the lingual swelling present on the crown of most anterior premolars, whereas the slight buccal swelling at the base of the crown is in evidence on the well preserved buccal face. In my reconstruction, the canine is shown somewhat ahead of P_3 in the eruption process, though not yet fully erupted. The plane of the basis mandibulae has been altered, so that the plane in this reconstruction is more in keeping with that offered by Weidenreich (1945: 101).

Implications of the juvenile status of Kedung Brubus

We may next enquire whether the juvenile status of Kedung Brubus necessitates a re-interpretation of its morphology. Two main aspects may be considered: the marked robusticity, and the form of the postero-inferior surface of the body, including the digastric fossa.

Robusticity

The marked robusticity at C/P_3, suggesting an even higher robusticity index at M_1 than 60 per cent, should certainly be seen as a consequence, at least in part, of the juvenile status of Kedung Brubus. Elsewhere, I have demonstrated that no fewer than 7 out of 7 immature mandibles of Middle and Upper Pleistocene hominines of Europe, Asia and Africa, have robusticity indices at M_1 of 60 or over, whereas only 3 out of 20 adult mandibles of the Middle Pleistocene and 1 out of 19 of the Upper Pleistocene have indices of 60 or over (Tobias, 1966a). These figures suggest that there is an ontogenetic tendency from very robust to less robust. This is confirmed by the *mean robusticity indices* of our various groups:

Juvenile hominines: Upper and Middle Pleistocene	68.9	(n = 7)
Adult hominines: Middle Pleistocene		
Africa	52.6	(n = 8)
Europe and Asia	57.3	(n = 12)
Combined	55.4	(n = 20)
Adult hominines: Upper Pleistocene		
Africa	49.2	(n = 7)
Europe	46.8	(n = 10)
Combined	47.8	(n = 17)

It would seem that the trend towards decreasing robusticity with maturity is based on two different growth trends: firstly, a trend toward marked increase in absolute height and, secondly, a slight increase, or the merest suggestion of a tendency towards decrease, in absolute thickness.

For the group of 7 immature individuals in my analysis of fossil hominids, the mean height at M_1 is 24.4 with a range from 18.0 to 28.5: whereas for 18 Middle Pleistocene adults, the mean is 31.5 and the range 24.6 to 40.0, and for 17 Upper Pleistocene adults, the mean is 31.5 and the range 24.3 to 36.7.

On the other hand, the mean thickness at M_1 in 7 immature fossil hominine mandibles is 16.6 and the range 15.0 to 18.1. The corresponding mean for 18 Middle Pleistocene adult hominines is 16.9 and the range 15.0 to 20.0, and for 16 Upper Pleistocene adults the mean is 15.0 and the range 12.0 to 18.2. The relatively great thickness of juvenile mandibles may be related to the presence within the alveoli of unerupted teeth, and with eruption a degree of relative narrowing may occur. Whether or not this is the mechanism, it does seem that the growth in width is outstripped by the growth in depth, thus effecting a reduction in relative robusticity.

Although, to the best of my knowledge, comparable figures are not available for the height, thickness and index of robusticity in the C/P_3 region, it is likely that precocious "robusticity" characterizes this region of the juvenile corpus mandibulae as well. Thus, the extreme robusticity of the Kedung Brubus mandibular fragment is probably the result, at least in part, of the immaturity of the specimen. It is impossible to predict whether the Kedung Brubus mandible would have become slightly thicker, remained of the same thickness or actually become slightly thinner, had the individual represented by it lived to adulthood. On the other hand, with further growth, it seems very likely that the height of the corpus mandibulae would have increased, and to a greater degree than any possible increase in breadth, since the breadth of the canine and anterior premolar teeth, to which the body-breadth is undoubtedly related in this area, was already established. The trend of further development of this mandible would seem to depend upon whether the affinities lie more with the Middle or with the Upper Pleistocene groups of fossil hominines; in either instance, however, the robusticity index may be expected to have dropped with maturity.

A further related factor is the sex of the individual. As Topinard originally pointed out (Weidenreich, 1936: 87), male individuals develop higher mandibular bodies and thus, as adults, have lower indices than females. Shima (1933) corroborated this sex difference in robusticity index for living Fushun-Chinese and Koreans. My research assistant, David Kaye,

and I have recently confirmed this finding for a series of Bantu mandibles: the mean robusticity index at the symphysis menti was 39.7 in females (n = 32) and 38.8 in males (n = 92). At the level of the mental foramen (which is closer to the C/P_3 position at which the measurements were possible in Kedung Brubus), the female and male means were respectively:

	Female Mean	Male Mean
Left side	39.6 (n = 24)	38.6 (n = 81)
Right side	39.3 (n = 25)	38.4 (n = 76)

In the region of M_1, the robusticity indices followed the usual pattern on the right side, but on the left side they were identical in the two sexes. The female samples were smallest for the M_1 measurements:

	Female Mean	Male Mean
Left side	47.7 (n = 21)	47.7 (n = 72)
Right side	46.3 (n = 21)	44.5 (n = 67)

In general, our results confirm that the much greater mean depth of the male mandible than the female mandible (varying in the different positions from 1.9 to 2.8 mm) gives a lower mean robusticity index for adult males than for adult females. We have, however, no good means for determining the sex of the Kedung Brubus mandible.

In sum, the extreme robusticity of the Kedung Brubus mandible would seem largely to reflect the immaturity of the individual and provides us with little indication of its affinities.

The digastric area and adjacent parts

A striking morphological attribute of the Kedung Brubus fragment is the linguo-basal surface. It is broad, flattish and slightly hollowed, and extends as far postero-laterally as the specimen itself. Since the earliest notes by Dubois, it has been regarded as the attachment area of an unusually developed anterior belly of the digastric muscle. Thus, Dubois (1891a) drew attention to "de zeer aanzienlijke afplatting en uitholling van de binnenvlakte der onderkaak (veroorzaakt door de inplanting van den Musculus digastricus)". He regarded it as the most remarkable trait of the mandible. In his detailed (1924a) description, he commented that "This attachment of the digastric muscle which, as in the gibbons, extends far backward, is incompatible with a function of the tongue as an organ of speech". He even went so far as to suggest that "The muscle may, indeed, have been particularly powerful

(much stronger in proportion to the size of the body than in the gibbons), because it had to bear a comparatively greater weight, on account of the erect attitude of Pithecanthropus." (p. 276). Weinert, too, referred to "eine lange und breite Ansatzfläche für den Digastricus" (1928: 523). A full description was given by Weidenreich, as follows, "... the most surprising aspect is presented by the lower margin. The latter is formed by a uniform broad and approximately smooth plane, the lateral border of which coincides with the lower border of the mandible itself. The medial border of this plane is just recognizable. This plane cannot be anything else but a part of the digastric fossa. However, that which is strange is the breadth of the fossa which is without parallel among all known hominid mandibles. Another peculiarity of the fossa is that it is situated completely at the lower margin of the mandible, being only somewhat inclined toward the lingual border of the margin. This position corresponds exactly to that recognized as characteristic of *Sinanthropus,* and to a certain degree also of some of the Krapina jaws. The only difference is the great breadth of the fossa in the Java mandible." (Weidenreich, 1936: 122).

My re-examination of the mandibular fragment has led me to question whether the whole of the hollowed linguo-basal surface is indeed to be regarded as the impression of the digastric muscle, as all previous workers have maintained (Weidenreich even holding that this entire surface was only a part of the digastric impression!). Careful inspection of the surface in oblique light, and discriminating palpation, leads me to recognize a somewhat hollowed oval region which is both narrower and shorter than the broad, hollowed linguo-basal plane. This smaller area extends for a distance of only 17.5 mm in length, whereas the preserved part of the plane surface is about 34 mm (chord length) long. Furthermore, the width of the impression in a labio-lingual direction is about 9.5 mm as compared with a total width of the linguo-basal plane of about 15 mm. Virchow (1920) has discussed the anatomy of this region in detail and has stressed that, whereas the anterior and medial borders of the digastric area project fairly strongly in all cases, the posterior border and still more the lateral border continue to the adjacent surface without a distinct limit. In keeping with this, the anterior border of the area in Kedung Brubus is marked by a distinct line of excrescences, beyond which the inferior border of the mandible continues as a smooth, unhollowed surface. Only a trace of the medial border is identifiable (as Weidenreich observed), and this too is marked by a small elevation. Only the faintest of linear impressions marks the posterior border, the position of which is identifiable more by the change in character of the bone surface than by any elevation. The postero-lateral margin of the area in

Kedung Brubus is fairly distinct, there being an abrupt change from the hollowed area to the smoother, unhollowed part posterior to it.

It is my conclusion therefore that only a relatively small part of the broad linguo-basal plane of Kedung Brubus is the attachment area of the digastric muscle; the dimensions of this small part are entirely in keeping with the dimensions of the area in other hominids (Schwalbe, 1914; Virchow, 1920; Weidenreich, 1936). The breadth-length index of 54.3% compares with values such as 45.8 for Mauer, 53.1 for La-Chapelle-aux-Saints, and 50-66.6 for three modern Alsatians (Schwalbe, 1914). The values quoted by Weidenreich (1936), after Virchow (1920) and Schoetensack (1908), give generally lower indicial values: thus 31.3 for Mauer, as compared with Schwalbe's 45.8 for the same specimen; 28.1 and 46.7 for Krapina H and I; 40.1 for the Le Moustier adolescent; 32.7 for the Ehringsdorf adult; 41.6 as the average for 12 mandibles of recent man measured by Virchow. The only pithecanthropine value quoted by Weidenreich is for *Sinanthropus* H I, which had an area of 7.7 by 26.9, giving an index of 28.7 per cent. The marked difference between the values as recorded by Weidenreich and those of Schwalbe underlines the difficulty of determining the dimensions with precision. As Patte has pointed out, "... les mesures de diamètre de l'empreinte sont extrêmement délicates et doivent dépendre de l'opérateur ..." (1955: 232). Nevertheless, Boule (1912), quoted by Dudley Buxton (1928), "has drawn attention to the interesting series presented by a chimpanzee jaw, the Mauer jaw, La Chapelle, and a modern French jaw. He admits that he cannot understand the physiological significance of the variation, which briefly, amounts to a gradual shortening and broadening of the imprint." (Buxton 1928: 80). One is led to conclude that the dimensions of the probable digastric area in Kedung Brubus are not exceptional among hominid mandibles, but that, in view of the difficulty and the variable results in the measurement of the area, and in view of the absence of data on growth changes in the digastric area, nothing can be inferred from the size or shape of the area, about the affinities of the individual represented.

The basis mandibulae and the linguo-basal plane

There remains to be considered the inferior border of the mandible and the broad linguo-basal plane. The inferior margin is unusually sharp, especially posteriorly from the level of P_3; anteriorly from this level, the margin is more smoothly rounded. A comparable arrangement is found in another juvenile mandible, namely that of B IV from Locus B at Chou-Kou-Tien. In this somewhat younger specimen, with all the right mandibular deciduous dentition in place as well as traces of an erupting M_1, the lower

margin is intact in the canine and precanine region. From a cast, as well as from the illustrations of Weidenreich (1936), it is clearly even sharper than in the corresponding area of Kedung Brubus. Similarly, in Ternifine II, one of the three mandibles of *Atlanthropus* from Algeria, the linguo-basal area has a sharp antero-inferior margin. In this specimen, which I examined through the courtesy of Professor C. Arambourg, the mandibular third molar is freshly erupted; its unworn state and the moderate degree of wear on the other teeth indicate that this jaw was from the youngest of the three individuals represented by mandibles from Ternifine, and was probably from an adolescent. Such sharpness of the lower margin is seldom encountered in adult hominid mandibles, and it is well known that the basis mandibulae thickens during growth to maturity. The sharp edge in Kedung Brubus would seem to be associated with the juvenile status of the specimen.

The broad linguo-basal plane, then, represents the lingual surface of the anterior part of the mandible, sloping from the sharp inferior border upwards and markedly backwards, to the position of maximum lingual bulging. This corresponds with the position of maximum robusticity of the preserved part of the jaw. The bulging area is broken off just lateral to the symphysis; clearly if prolonged to the midline, it would flow into the retro-symphyseal bulges known as the superior and inferior transverse tori. Above the superior torus, a slight trace of a marked planum alveolare is preserved. These features are reproduced almost exactly, though on a slighter scale, in the pithecanthropine child mandible B IV. On the other hand, another child mandible, B III, from Locus B at Chou-Kou-Tien, of slightly older years than B IV and identified by Weidenreich (1936: 17) as about 8-9 years, shows little development of these transverse tori and no planum alveolare. Clearly, the morphology in this region of *Homo erectus* varies appreciably among individuals, apart from any age-changes. Possibly, the much robuster B IV represents a male, and the more gracile B III a female. Kedung Brubus, although perhaps of the same age as B III, much more closely resembles B IV in robusticity and in the pattern of retro-symphyseal morphology. This is one complex of features of Kedung Brubus which points to an affinity with *Homo erectus*.

Another is the virtual absence of a build-up for the bony chin on the outer aspect of the basis mandibulae, as far antero-medially as the jaw is preserved. The point of breakage must be very close to the midline, to judge from the position of the canine socket above. This is in keeping with the reconstructions of both Dubois (1924b) and Weidenreich (1945). In this area adjacent to the break, only a slight fulness suggests the presence of a poorly-developed mental tubercle, one of the components of the mental

trigone sculptured on the front of the bony chin. There is, however, no trace of the generalized anterior projection of the basis mandibulae, known as the mentum osseum. In possessing a faint suggestion of only one of the several morphological elements which go to make up a bony chin, Kedung Brubus may justifiably be said to possess an extremely slightly developed chin.

Conclusions

At least two of the attributes of the Kedung Brubus mandible, formerly thought to be of morphological and taxonomic significance, are probably indicators of the juvenile status of the individual represented: these are the extreme robusticity of the corpus mandibulae and the sharp inferior margin of the mandible. A third trait which was formerly considered of significance is the digastric impression: a re-examination suggests that it is not co-extensive with the broad, hollowed linguo-basal plane, but is appreciably smaller and within hominine limits.

The fourth and fifth traits are considered morphologically significant: one is the retro-symphyseal structure, characterized by a very powerful buttress leading medially to what must have been extremely well-developed superior and inferior transverse tori; and a strongly-marked planum alveolare. The other is the virtual absence of a bony chin. These two features occur as well-marked traits in most, though not all, mandibles of *Homo erectus*; however, they may occur as well in Neandertaloid jaws (Tobias, 1962a, 1962b, 1966b). That is to say, tempting as it may be to attribute the fragment to *Homo erectus* or even *Homo ? erectus,* the morphology is within the limits possible for *Homo sapiens neanderthalensis.* It is concluded that the morphological traits presented by the immature mandible of Kedung Brubus are not sufficient to allow us to identify the species of *Homo* to which the individual belonged. Until new evidence should come to light, the conclusion is inescapable that the specimen be classified as belonging to *Homo* spec. indet.

Summary

(1) A re-study of the Kedung Brubus mandibular fragment reveals the previously unsuspected fact that it most probably belonged to a juvenile.

(2) The extreme robusticity of the corpus mandibulae and the sharp inferior margin are regarded as expressions of the immature status of the mandible.

(3) The broad, hollowed linguo-basal plane is the consequence of the

sharp lower margin and the well-marked retro-symphyseal buttress; it is concluded that only a part of this plane provided attachment for the anterior belly of the digastric muscle, the impression for which seems to the author to be within hominine limits.

(4) A retro-symphyseal buttress leading medialwards to presumed well-developed superior and inferior transverse tori, and a marked planum alveolare, form a complex of archaic features characterizing the posterior surface of the symphyseal and para-symphyseal regions.

(5) Of the various bony elements which make up the chin, only the mental trigone is represented by the faintest suggestion of its lower outer angle, the mental tubercle. Thus, Kedung Brubus has another archaic feature in its poorly-developed bony chin.

(6) Since these archaic traits characterize both pithecanthropine and some Neandertaloid mandibles, it is not possible on the slender evidence preserved to allocate the mandible of Kedung Brubus to a particular species of *Homo*. The conclusion is unavoidable that, until new evidence should come to light, the specimen should be classified as belonging to *Homo* spec. indet.

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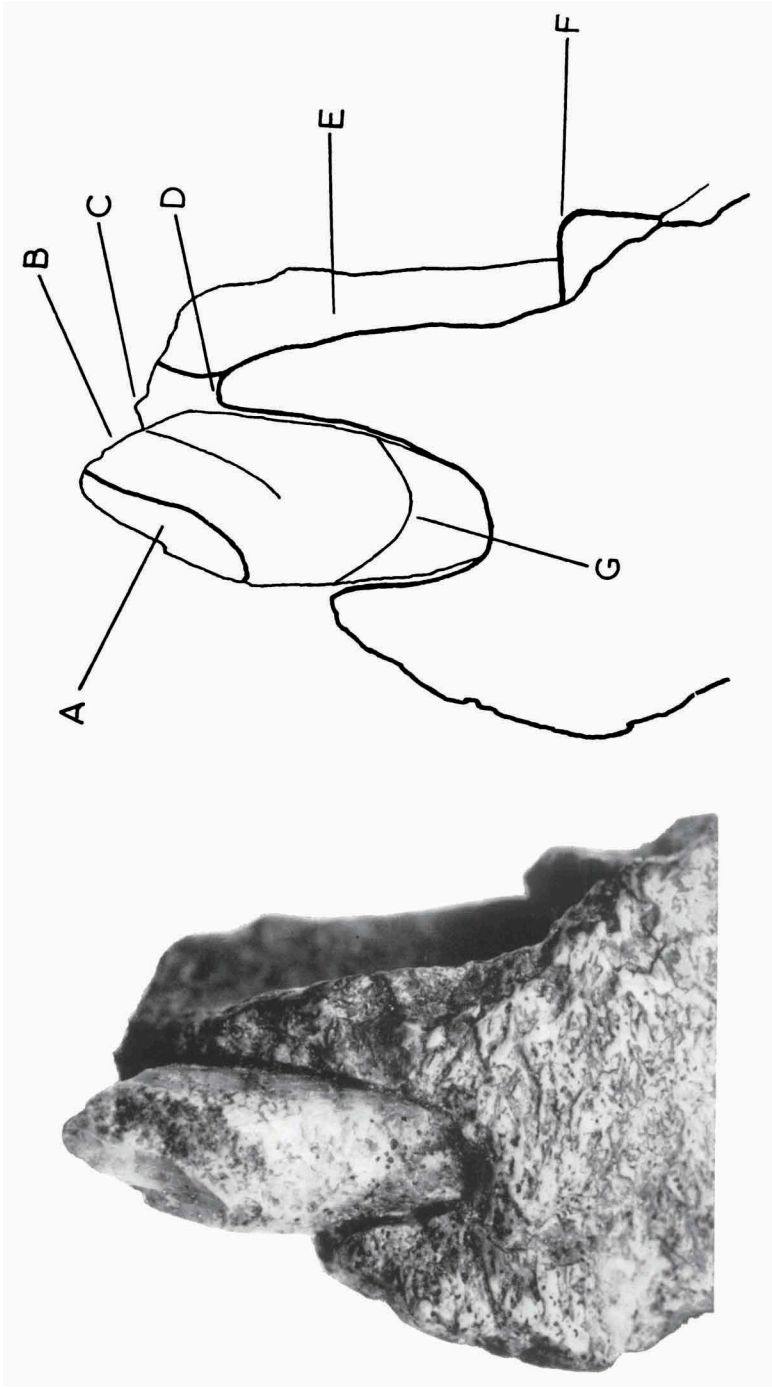
EXPLANATION OF PLATE 1

Buccal surface of anterior right premolar of Kedung Brubus to show the clear distinction between the crown enamel and the cementum below. Note the cervical enamel line at the junction between the two regions. To the right of the premolar, the C/P_3 interalveolar septum is clearly seen extending far higher than the cervical enamel line. On the left (distal) face of the crown stump, one of the cut-marks or chop-facets is clearly evident.

Key: A, cut-mark (?) on distal face of crown stump;
B, position of cut-mark (?) on mesial face of crown stump;
C, highest preserved point of C/P_3 interalveolar septum;
D, highest point of C/P_3 interalveolar septum of buccal face of jaw;
E, canine alveolus;
F, root stump of canine;
G, cervical enamel line.


A
B
C
D
E
F
G