Adjustment of the beam. Perhaps corrected frequently; certainly by the Bhutia ploughman during a very short period of observation. Note that a simple shortening or lengthening of the rope attaching the beam to the yoke would not meet fully the dynamical requirements suggested.

Acknowledgment

I am most grateful to Miss D. Regel and Miss E. M. Buxton for help with Russian translations and mapping respectively, to Mr. R. Simmonds, Andover, for kindly running through Mr. Tyson's 1953 film for me, but above all to Mr. D. Wardle and Miss D. Bright for assistance with the 1961 material.

Notes

[1] *Alpine J.*, Vol. LIX, No. 289 (November, 1954), pp. 421ff., especially map facing p. 427.

[2] A. H. Savage Landor, *Tibet and Nepal*, 1905, pp. 48, 60.

[3] *Alpine J.*, Vol. LXVII, No. 304 (May, 1962), pp. 120–129; *Geog. Mag.* (January, 1963), pp. 532–546.

[4] F. G. Payne, 'The Plough in Ancient Britain,' *Archæol. J.*, Vol. CIV (1948), Plate VII, facing p. 96, reproduced from *Country Life*.

[5] P. Leser, *Entstehung und Verbreitung des Pfluges*, 1931, *passim*.

[6] A. G. Haudricourt and M. Jean-Brunhes Delamarre, *L'Homme et la Charrue*, 1955. P. 78 *et passim*.

[7] A. Scheibe, in *Deutsche im Hindukusch . . . 1935*, 1937, p. 106, fig. 36, 2.

[8] N. I. Vavilov and D. Bukinich, 'Agricultural Afghanistan,' *Bull. Applied Botany*, Vol. XXXII (1929), Supplement 33, p. 72, fig. 43.

[9] Mr. E. J. M. Dent, late of the Pakistan Civil Service, tells me that the *yewe* (Pushtu) used widely in Central Pakistan is an *Sy'* plough, with long, slender brace connecting handle and beam; a seed funnel replaces the handle at seed time. *Cf.* Haudricourt and Delamarre, Plate XI, 40, facing p. 352.

[10] Leser, *op. cit.*, Plate XVII*a*, facing p. 376.

[11] Vavilov and Bukinich, *op. cit.*, p. 183, fig. 134.

[12] Scheibe, *op. cit.*, p. 105 and p. 177 (by A. Herrlich).

[13] 'Kashmiri farmer' (ploughing), photograph: Paul Popper, B.B.C. *Broadcast to Schools: Geography*, March, 1958. Introduced perhaps during eighteenth-century Afghan expansion.

[14] Leser, *op. cit.*, p. 368, fig. 219, perhaps from an area penetrated by Muslim influence in the nineteenth century. Justice William O. Douglas tells me that he thinks that he saw only Tibetan-type plows in 1951.

[15] Photo of *c.* 1920 by the late Miss M. T. Powell; by favour of the Revd. N. G. Powell.

[16] Leser *op. cit.*, p. 368; marked '?' but perhaps supported by Clarkabad and Solon records.

[17] W. Koppers, *Die Bhil in Zentralindien*, 1948, Plate IV, 3.

[18] H. von Schlagintweit-Sakuenluenski, *Reisen in Indien und Hochasien*, Vol. II, 1871, p. 447.

[19] J. Tyson, 'Himalayan Traders,' *Geog. Mag.*, July, 1953, pp. 139ff.

[20] N. I. Vavilov, 'The Role of Central Asia in the Origin of Cultivated Plants,' *Bull. of Applied Botany of Genetics and Plant Breeding*, Vol. XXVI, No. 3 (1931), p. 23, fig. 26 and p. 25, fig. 27.

[21] A. Scheibe, *op. cit.*, p. 106, figs. 36, 3 and 36, 4 (Chitrali; with wooden share).

[22] E. O. Lorimer, *Language Hunting in the Karakoram*, 1939, Plate X, 2, facing p. 114.

[23] C. von Fürer-Haimendorf, photograph 4 in E. Maillart, *Land of the Sherpas*, 1955.

[24] L. Havemeyer, *Ethnography*, 1929, fig. p. 447.

[25] Leser, *op. cit.*, p. 374, fig. 225.

[26] F. Ratzel, *Völkerkunde*, 2nd edn., 1894–95, Vol. II, p. 542, plough on right; see Leser, *op. cit.*, p. 375.

[27] M. Lobsiger-Dellenbach, *Népal: Cat. ethnog. népalaise du Mus. d'Ethnog. de la Ville de Génève*, 1954, p. 8, Plate I, 6.

[28] Information kindly supplied by Mr. S. T. Wall, Nepali Evangelistic Band, Pokhra, in 1956–57. The metal bar share 'about 9 ins. × 1 in. × ¼ in. is fixed into a ¼ in. slot' on the *under* side of the 'shoe.'

[29] The 'Lautan' plough; Science Museum, London, 1933–218, model one-third full size, with low handle 'curving gradually forward,' metal bar share (*phali*) and an underlying wooden share (*chou*) both secured by a wedge in the rear. From description kindly supplied by Mr. G. M. Lane.

[30] Vavilov and Bukinich, *op. cit.*, p. 183, fig. 133, and p. 182, fig. 132, 4.

[31] Leser, *op. cit.*, p. 352, fig. 204. By exception a swing plough. The coulter suggests relegation to use as fore-plough.

[32] Z. A. Nikolskaya and E. M. Shilling, article in *Sovetskaya Etnografiya*, Vol. IV (1952), pp. 95ff. and p. 100 (for 'runner').

[33] For a parallel to one stage of the 'evolutionary development' suggested for Dagestan, compare with each other A. Miller's two Abkhazian ploughs (*Materialli po etnogr. Rossii*, Vol. I (1910), p. 71, fig. 19). Note the significance in this context of Leser's important conception of 'general form' (*Gerippe*), *op. cit.*, p. 354.

[34] Without prejudice to the wide range of *Sy'* handles, from the high, slender handle of the Georgian plough in Leningrad Museum (Vavilov and Bukinich, *op. cit.*, p. 187, fig. 139) to the low, squat, forked handles of an 'Avar' plough—perhaps low for steeper slopes and forked for alternate use of hands singly (Comte E. de Zichy, *Voyages au Caucase*, 1897, p. 279, no. 731; Plate LXXXVIII, 7).

[35] *E.g.* a wedge at Tli,[11] peg on the Koh-Daman plain,[7] curved brace at Gandhara,[10] sheath at Kandahar (Scheibe, *loc. cit.*, fig. 36, 1).

[36] For side control seen in a wider ethnological connexion see B. Bratanić, in *Selected Papers of the Fifth International Congress of Anthropological and Ethnological Sciences, Philadelphia*, 1956, p. 222.

[37] A. Steensberg, 'Parallel Ploughing with Alternately Sloping and Upright Ard in Columella,' *Folk-Liv.*, 1957–58, pp. 157–162.

SHORTER NOTES

A Bead Factory in Amsterdam in the Seventeenth Century.

219 *By Dr. W. G. N. van der Sleen, Naarden, Holland. With three text figures*

In April, 1960, Mr. Ypey of the Rijksdienst voor Oudheidkundig Bodemonderzoek handed me a few distorted beads and some small coloured glass tubes, found in newly ploughed fields near Naarden-Bussum, a small town half-an-hour by car east of Amsterdam. Following this lead, I soon found out that several fields in that neighbourhood were littered with potsherds, pipestems, bits of Chinese Ming porcelain and Japanese Imari, and many very small pipebowls—in other words, material such as is found in the refuse and ashheaps of a rich, large city. Many pipebowls were datable to the first quarter of the seventeenth century, several sherds of waterjugs in blue German stoneware carried inscriptions of 1626, 1630, 1644, etc., and pieces of Delft majolica bore dates such as 1630. Lastly, there were dozens of well preserved glass beads and small tubes such as are used in bead manufacture.

Further investigation brought most interesting results: (1) that all around Amsterdam and other towns refuse, ash and sewage had been used as manure in the seventeenth century (Wagenaar, 1765); (2) that many fields around Amsterdam contained hundreds of glass beads and other refuse of a glass factory; (3) that a glass factory '*à la façon de Venise*' had existed in Amsterdam from 1608 till about 1680, where for a long time 80 households worked at the manufacture of beads (Hudig, 1923); (4) that one of the

directors of the famous V.O.C., the East India Company, had brought hundreds of shiploads of sand to Amsterdam from the sandhills around Bussum for the strengthening of building sites and roads. On the barren sandy ground at Bussum they built their summer houses and castles after first manuring the soil with the refuse of Amsterdam, brought in by the empty sand barges as they returned for more sand (Archives of 's Graveland); (5) that workers from Murano and Venice had been tempted from their posts as foremen in the Venetian glass industry and had been paid to teach the Dutch artisans in Holland to make glass and beads (Archives of Amsterdam, 1613); (6) that the Amsterdam beads have the same pattern and forms and colours as the Venetian ones, but happily with a difference! It seems that the supply of soda was at that time very short in Holland, but potash was plentiful in the peat-and-wood-burning towns and factories. This explains why many Amsterdam beads contain as alkali up to 23 per cent K_2O and sometimes only traces of Na_2O, while most Venetian and Egyptian beads and even many Indian specimens nearly always contain a high percentage of Na_2O and much less K_2O (Tornati and van der Sleen, 1960).

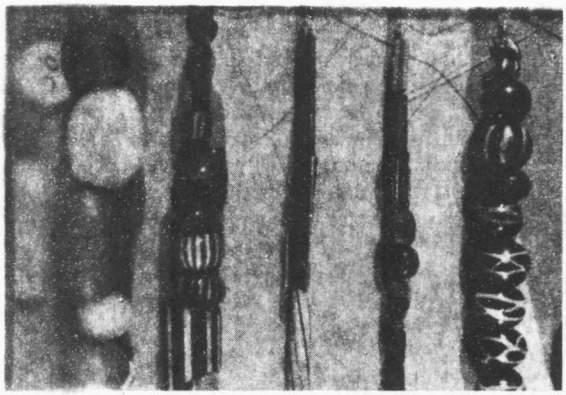

FIG. 1. SEVENTEENTH-CENTURY BEADS FROM A GLASS FACTORY IN AMSTERDAM, COLLECTED NEAR NAARDEN-BUSSUM

The study of the Amsterdam beads shows again how very careful we must be in judging and dating beads. A few years ago I received a good lot of beads, collected by priests on the Indonesian island of Flores, mostly from tombs! Some specimens I was able to name and recognize instantly, as I had seen their counterparts in H. C. Beck's classification (Beck, 1928), especially three well-known kinds of beads. First, there was the twisted square bead (Beck, p. 17, A4), secondly the mulberry bead (Beck, p. 27, A3*b*) and thirdly the chevron or rosetta beads (Beck, p. 65, fig. 66). The text with these three beads reads 'Egypt, Roman Period.' Now of course I cannot say that these beads were not made in Egypt in the Roman Period. So I corresponded about them with Sir Mortimer Wheeler, thinking of a second Arikamedu, but much farther away to the east. And now—I was able to prove to myself that all these beads from Indonesia were made in Amsterdam in the seventeenth century and probably brought to Flores by the ships of the East India Company, the famous V.O.C.

I may give another example of how wrongly beads are sometimes judged. In MAN, 1905, 1, Sir Hercules Read gave a description of 'A Necklace of Glass Beads from West Africa.' He compared it with types from Greek tombs and came to the following conclusion: 'Glass beads of classical style found for the first time in West Africa, and presenting features that in point of date may justifiably be associated with the name and time of the Carthaginian Hanno' (600 B.C.). As Read gave a full-page and almost full-size picture of the necklace and a good description as well, I am able to be quite sure that except for the numerous ostrich-eggshell beads, all the other beads were made in the Amsterdam factory!

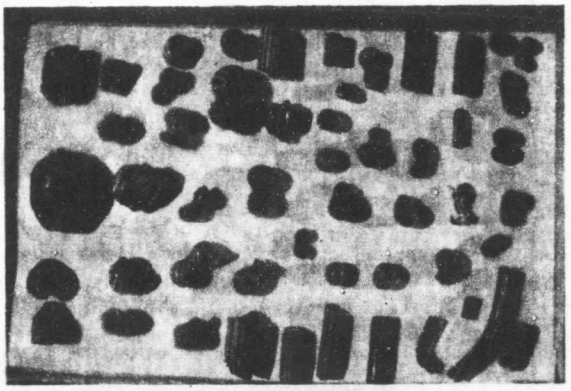

FIG. 2. BEADS FROM THE AMSTERDAM GLASS FACTORY, COLLECTED AROUND AMSTERDAM

Now a new task awaits me, *viz.* to find out when and where the Amsterdam beads were sent for barter. I know them already from Indonesia (Java, Bali, Flores), from Africa (Pretoria, Durban, Madagascar, Gold Coast, etc.). They were brought to Easter Island, to the Antilles (St. Eustatius), and most probably to Canada and America. One of the largest and most easily recognizable bead is a blue or white pentagonal cylinder of nearly an inch long and half as wide. Another well-known bead is the twisted square bead, which I would prefer to call the pentagon bead as the surface is divided into eight pentagons. The Amsterdam chevron beads are of large and small sizes, but the larger ones in particular lack the beautiful finish of the modern specimens. It is well known that these beautiful, intricate beads are still made in Venice in great quantities and in all sizes and varieties.

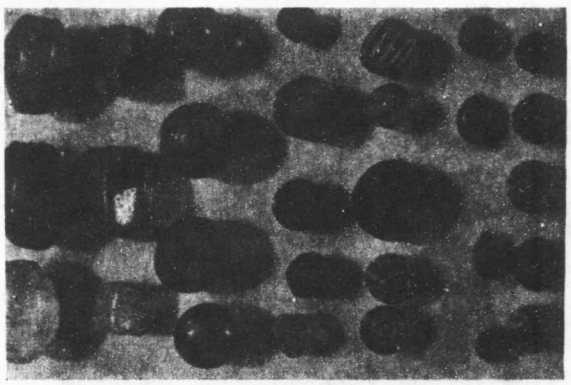

FIG. 3. BEADS FROM THE AMSTERDAM FACTORY

Reading from left to right: second row, pentagonal cylinders in blue and white; fourth row, four pentagonal beads and one ornamented bead; two right-hand rows, small chevron or rosetta beads

More information on this subject is given in the Report on the Archæological Congress in Amersfoort, Netherlands, held on 2 and 3 January, 1961. A very good colour picture of a large collection of Amsterdam beads appeared in the Dutch weekly *Panorama* on 11 March, 1961, which is available on request to me at Flevolaan 48, Naarden, Netherlands.

References

Archives of Amsterdam, 1613 (apply to H. A. Soop).
Beck, H. C., 'Classification and Nomenclature of Beads and Pendants,' *Archæologia*, Vol. LXXVII (1928), pp. 17, 27, 65.
Hudig, F. J., *Das Glass*, 1923, pp. 35.
Tornati, M., and W. G. N. van der Sleen, 'L'analisi chimica aiuta l'Archeologia,' *Vetro e Silicati*, Vol. IV (1960), pp. 19–24.

A Note on Some Spears from Bornu, Northern Nigeria.

By A. H. M. Kirk-Greene, Institute of Administration, Zaria, Northern Nigeria. *With three text figures*

220

The Resident's Library in Maiduguri, Bornu Province, despite certain depredations about which the less said the better,[1] at one time boasted a very fine collection of Nigeriana; with eminent Nigerians like Vischer, Hewby, Palmer, Lethem and Patterson working in the Province in its first 30 years, it could hardly fail to be richly appointed. While I was working as a District Officer in Bornu a few years ago, it occurred to me that we might be able to transfer some of the more precious archives from the danger zone of the Records Office, where there was a distressingly growing list of 'files destroyed by white ants' entered on the card index, to the comparative safety of the Library. Among the papers that we managed to salve was a collection of notes on the spears extant in Bornu *c.* 1925–1930, accompanied by a number of attractive sketches. Regrettably, I was unable to bring all these notes up to date in the field before I left Bornu, but I was able to make some investigation of the weapons used by the Bornu army a century ago. Subsequent library research has now encouraged me to edit and expand the memorandum and, with the permission of one of the original contributors,[2] to reproduce the original sketches in the belief that they deserve to be made available to a wider audience than has heretofore been possible and that this paper may represent a helpful starting point for further inquiries on Northern Nigerian spears.[3]

The late nineteen-twenties was the period when Government Anthropological Officers were active in Nigeria. One of the topics on which research had been undertaken in the Southern Provinces was the spear cult, particularly in the Onitsha and Owerri Provinces. Memoranda were submitted and analysed by the Government Anthropologist—memorable is his castigation of some of the *soi-disant* spears produced for his inspection, 'roughly fashioned from eighteenth-century bayonets—no doubt a result of barter trade with European traders who probably got them cheaply from a Disposals' Board after the Napoleonic wars and initiated a temporary fashion in juju spears.'[4] When the report was passed to that great Bornu figure, the late Sir Richmond Palmer, who was then Lieutenant-Governor of the Northern Provinces, he at once thought of Bornu where, to quote His Honour's minute, 'the spear is *par excellence* the symbol not only of sovereignty but of nobility among all the Berber races.' Meek,[5] in noting earlier that the spear was the characteristic weapon of Africa, had pointed out that the Shuwa and Kanuri of Bornu used the spear exclusively. Tradition still tells in Bornu how the original Sef dynasty had fought with swords, while the Magumi dynasty was distinguished by its spears.[6] The spear, as is to be expected, features prominently in Kanuri poetry, in such similes as *kiriyenemtu kasaga bulbe* ('your generosity is a polished

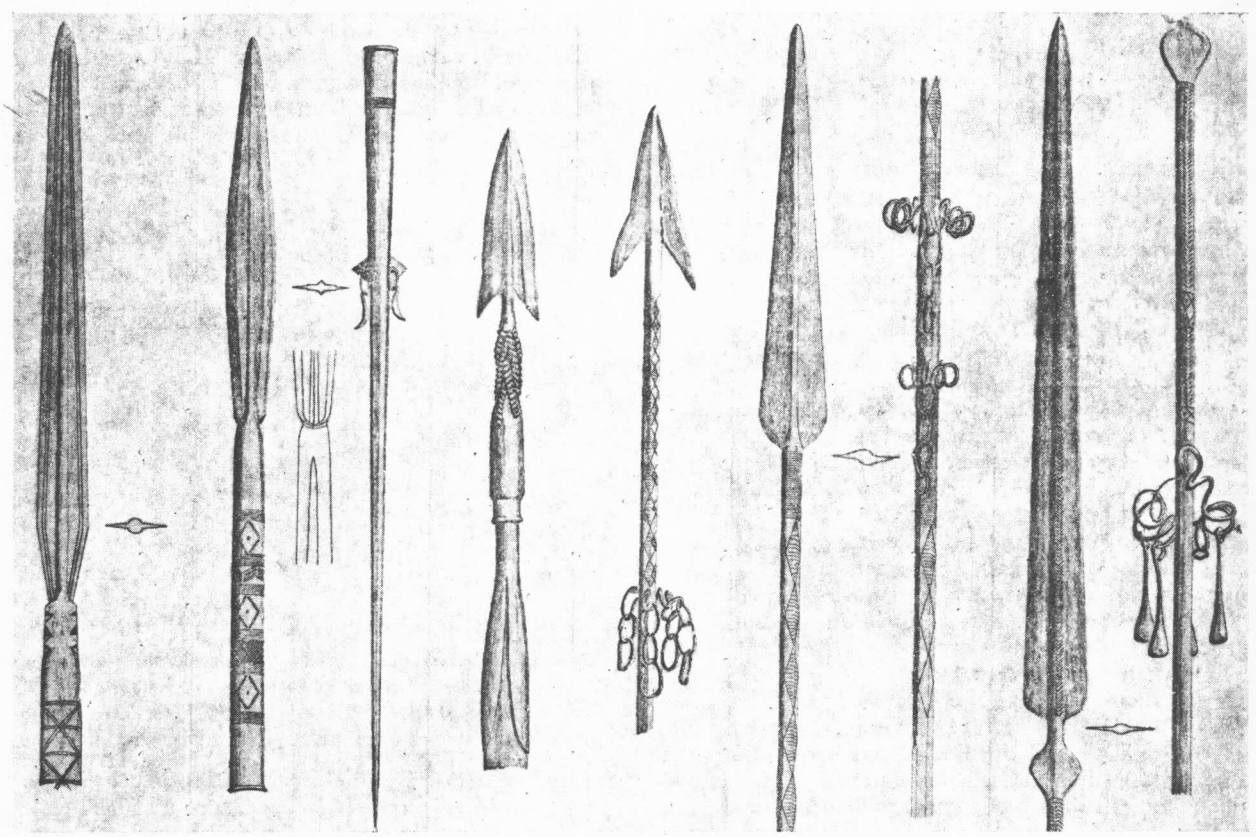

FIG. 1. BABUR SPEARS FROM BIU DIVISION, NORTHERN NIGERIA