

COUNTY BOROUGH OF HALIFAX
BANKFIELD MUSEUM NOTES
SECOND SERIES.—No. 12.

Methods of Hand Spinning
in Egypt and the Sudan

BY

GRACE M. CROWFOOT

PRICE ~~THREE~~ ~~SIXPENCE~~

CORRIGENDA.

Page 4. List of Contents. *Transpose* "Grasped Spindle" and
"Rotation of Spindle in Hand."

Page 44, line 29. For "III.," *read* "IV."

Page 45, line 5. For "IV.," *read* "III."

„ line 26. For "Type IV.," *read* "Type III."

TYPE 1.—NUER WOMEN HAND-SPINNING. (SUDAN).



[Photo by J. W. Crawford.]



[Photo by J. W. Crawford.]

Plate 1.

COUNTY BOROUGH OF HALIFAX
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(G. R. CARLINE, *Keeper*)

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FOREWORD.

IT is some years since the Museum has published a further number to its useful series of BANKFIELD MUSEUM NOTES which were commenced (and mostly written) by the former Keeper, the late Mr. H. Ling Roth. The following work on Methods of Hand Spinning in Egypt and the Sudan, by Mrs. Crowfoot who is the authority on this subject, is much welcomed by the Museum as one of its publications. I apologize to the author and to the public for the delay in its appearance as it should have been out a year ago.

The photographs used for the plates of this work, unless otherwise stated, were taken by Mrs. Crowfoot herself, the line drawings (Figs. 1, 9, 10, 11), were made by Miss D. Crowfoot. I am responsible for a few footnotes, which are initialled and also for the index; most of the quotations and references I have checked and verified.

I am very grateful to Mrs. Crowfoot for allowing the Museum to have the benefit of publishing her work as a Museum publication, and for her patience over the delay in issuing it.

G. R. CARLINE, Keeper.

 AUTHOR'S THANKS.

THE Author's grateful thanks are due to the Halifax Museums' Committee and to Mr. Carline for publishing this work, to Sir Flinders Petrie for his encouragement and leave to reprint the section on Flax spinning in Modern Egypt, already published in substance in "Ancient Egypt" 1928; also for the loan of the blocks for Plate 18 and Fig. 6. To Dr. Albright and Miss Murray for reading in MS. the section on "Spinning in Ancient Egypt." To Dr. Seligman for leave to use his photographs for Plates 6 and 7. To the Director of the British Museum for permission to have photographed the pencil drawing by Goodall for Plate 11. To Mr. Henry Balfour for his fine drawing of the distaff (Plate 40) under his care in the Pitt Rivers Museum, Oxford. To Dr. D. A. Allan for permission to have photographed the "Garstang" Model in the Liverpool Museum, for Plate 17. To Prof. Newberry and Mr. N. de G. Davies for permission to publish illustrations of Ancient Egyptian spinning scenes from their works, namely Figs. 7, 8, and Plate 16; and Figs. 4 and 5, respectively. The author's thanks are also due to Mr. Carline for seeing the work through the press.

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Methods of Hand Spinning in EGYPT and the SUDAN.

INTRODUCTION.

I was much tempted to call this paper a study in the Evolution of Hand Spinning, for in this area a number of different types are found, from the most primitive and simple type of hand spinning, by hand alone, to the highest type of suspended spindle spinning reached before the invention of the wheel. I refrained, knowing that the connection in development of these various types is nowhere certain.

Of evolution, Thomson and Geddes say:¹ "the line of progress is . . . no straight line but at most an asymptote," a wise saw very applicable here, where the student notes the most suggestive and tantalizing resemblances in different types of the craft, is led to think that one may have evolved directly into another, and yet can never point to the exact time or spot on earth, where, before history was written, or while it was being written about something else, this particular step in progress was made. Another saying of the same authors also rings true—"The ideal of evolution is . . . no gladiator's show."² The new does not always slay the old, and some most primitive method of making thread may survive for some special use, surrounded by the methods of superior culture. And, of course, in isolated areas one naturally expects to find survivals, especially where no necessity drives to invention, and no new materials are discovered.

Another consideration against formulating too precise theories of Evolution in Spinning is the variation of the raw materials used. Flax, cotton and wool have their own special differences in fibre, and each has differences of quality as well, and these can be seen as reasons for different methods of spinning—one method may be more suitable for one material than another, but not necessarily a higher method of spinning.

Still broadly there is a lower and a higher ; speed, strength, and evenness of the yarn are always considerations, whatever material is used and whether the yarn is destined for the weaving of tents, blankets or clothing, and for the latter, fineness always counts too.

A classification then, seeking to define types and taking into consideration qualities of the method and the product, may be attempted ; I have based mine on that of Miss Kissell in "Yarn and Cloth Making"³ with such alterations and additions as the

¹ J. A. Thomson and P. Geddes : *Evolution*, page 247. *Home University Library Series*.

² *Ibid.*

³ *Mary Lois Kissell : Yarn and Cloth Making*. Macmillan & Co., 1918.

new material seems to call for. She recognizes four main types :—
 1, Hand Spinning ; 2, Grasped Spindle ; 3, Supported Hand Spindle ;
 4, Suspended Hand Spindle. There are in our area two processes which do not seem to fit exactly into any of the above categories—that of the Beni Amer who spin with a hooked stick, and that of the Hadendowa and Sudanese Arabs who spin with a spindle rotating in the hand, and in the table which follows I place these processes between Kissell 1 and Kissell 2 for the following reasons. The Beni Amer method is quite certainly very primitive, the hooked stick being merely twisted between the finger and thumb. Rotation in the hand though in some ways surpassing Grasped Spindle and Supported Spindle could not possibly have evolved into Suspended Spindle which is the most advanced method known, and on these grounds I place it lower in the scale than either Grasped Spindle or Supported Spindle. My table will therefore read as follows ;—

1. Hand Spinning. (Kissell 1).
2. Spinning with a hooked stick.
3. Rotation of Spindle in the Hand.
4. Grasped Spindle. (Kissell 2).
5. Supported Spindle. (Kissell 3).
 - (A) Spindle resting on thigh.
 - (B) Spindle standing erect in bowl or cup.
6. Suspended Spindle. (Kissell 4).

Before discussing the examples of these types to be found in our area, a few words to explain the processes involved in spinning may be helpful. "Spinning (. . .), [is] the forming of threads by drawing out and twisting various fibres."¹ After having been drawn and twisted, i.e. spun, the thread has also to be wound, therefore in our discussion three processes will be distinguished, attenuation, twisting, and winding.

ATTENUATION or drafting is of two kinds, drafting by stretching, and drafting by drawing. The best method, Miss Kissell says² "is a combination of the two, giving the rove both a drawing and a stretching In the simplest Hand spinning, attenuation is by drawing, but in spinning by Hand-on-the-thigh, by the Grasped-spindle and by the Supported-spindle it is accomplished by stretching. The most perfect hand drafting is in Suspended-spindle spinning, where the hand of the spinner draws the rove, while at the same time the spindle by its weight drafts it still further by stretching."

TWISTING is the important factor in spinning ; all fibres have irregularities visible under the microscope ; wool fibres have their scales, flax fibres have knots, and cotton kinks and twists, and by

¹ *Encyclopædia Britannica, 11th Edition, 1911, Vol. 25, page 685.*

² *Op. cit., pt. 6 and 7.*

TYPE 2. BENI AMER, SUDAN.



Plate 3.—SPINNING WITH HOOKED STICK.

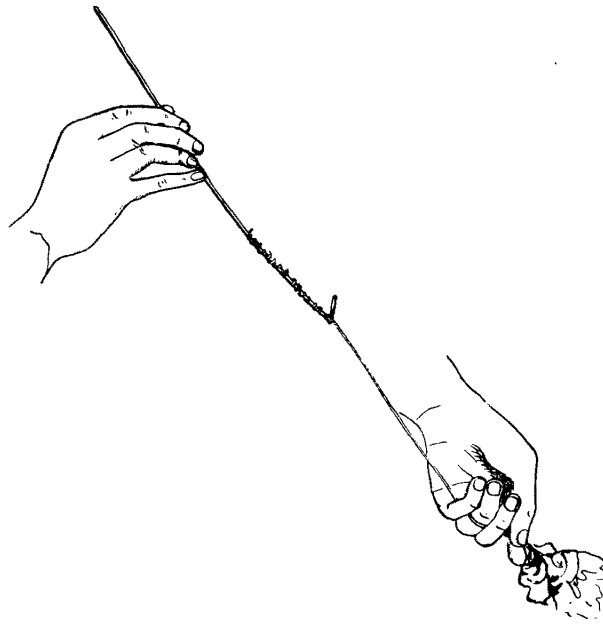


Fig. 1.—METHOD OF HOLDING SPINDLE AND WOOL.

TYPE 3 (A). HADENDOWA, SUDAN



Plate 4.—DRAWING OUT WHILE THE SPINDLE ROTATES IN THE HAND.



Plate 5.—THE END OF THE SPIN.

TYPE 3 (A) KABABISH, SUDAN.



Plate 6.—WHIPPING UP THE WOOL.

[Photo by Dr. C. G. Seligman.]



Plate 7.—SPINNING.

[Photo by Dr. C. G. Seligman.]

TYPE 3 (B).



Plate 9.—BEDOUIN, BURG EL ARAB, NEAR ALEXANDRIA.



Plate 8.—ABABDE, KABUSHIYA, SUDAN.

means of these irregularities the fibres cling together when pressed by twisting. The twisting therefore is what gives elasticity and strength to the spun yarn.

WINDING. In Hand Spinning (Type 1) the yarn is wound into a ball, but in all Hand Spindle Spinning it is wound on to the spindle. Attenuation and twisting are sometimes separate processes and sometimes simultaneous, but winding is always separate.

Keeping these distinctions in mind, we can go on to the study of the different methods of spinning found in Egypt and the Sudan.

TYPE 1.

HAND SPINNING.

This is the simplest form of spinning known, the thread being formed entirely by hand, yet even within it varieties are found. They may be divided into :

- A. Spinning by the hands alone.
- B. Hand and thigh spinning.

In the first method, A, the three processes, attenuation, twisting, and winding, have all to be done separately, and the spinning is extremely slow. In method B, the thread is rolled on the thigh by one hand while the other draws the thread, and the thread is produced more quickly and is more likely to be even.

I can give no example of this Hand Spinning in Modern Egypt, but one may reasonably class under this head the preparation of a flax rove for re-spinning by Ancient Egyptian women (see page 22); the action of rolling the fibre on the thigh is seen particularly clearly in the Tomb of Daga, as noted by Davies¹, (see Fig. 5).

In the Sudan I have seen similar ways of making a thread used by old men when rolling up fibres by hand for grass ropes. Apart from this crude procedure, the only instance I can give is, as one would expect with so primitive a form of craft, from the far south.

Plates 1 and 2 show two Nuer women spinning cotton while on the Lady Baker steamer as patients, at Hillet Nuer, Bahr el Jebel. Plate 1 shows the beginning of the spinning, the cotton is being held in the right hand and the thread rolled out by the left hand on the thigh. Later the spinner was assisted by another woman, shown on the right in Plate 2, holding the end of the thread and winding it into a ball. This thread was not spun to weave from, but for a more primitive use, as string for attaching some small object to the person.

¹ N. de G. Davies, *Five Theban Tombs*. 1913. Plate XXXVII.

TYPE 2.

SPINNING BY TWISTING A HOOKED STICK.

Here again, an exceedingly simple and primitive way of spinning was found where it might have been expected among shy nomads, irresponsive to cultures around them, clinging to their own speech and their own ways. There is a section of the Beni Amer, Red Sea Province, known as "Beit Awad" who are famous for their skill in weaving coarse yellowish brown cloths, used as blankets or as covers for their tents, or rather booths. While I was on a trek from the Karora Hills which lie about 100 miles south of Suakin, I was fortunate enough to find "Beit Awad" encamped at the hill of Tulug and to persuade one of the women there to show her craft. She is seen spinning in Plate 3, holding the spindle—a stick with a small natural crook at the end—in her right hand and twirling it between the fingers and thumb. The wool, previously teased out by hand, was fed into the thread and controlled by the left hand. The spinner, surrounded by terrifying strangers—and men, too, only consented to a photograph when thoroughly veiled; this accounts for her shrouded appearance which makes it difficult to see exactly what she is doing; but it is hoped that this will be clear from Fig. 1, which gives a somewhat similar position of the hands as the photograph, the right hand raised twisting the hooked stick, and the left hand on the ground, drafting the wool. The stick is shown in plate 37, fig. 5. This method of spinning is very easy but very slow, and all the thread I saw that had been produced by it was not only coarse, which was probably desirable, but also very uneven. I saw no doubling or doubled thread in any of the pieces of cloth shown.

TYPE 3.

SPINNING BY ROTATION OF SPINDLE IN THE HAND.

SUDAN.

This is a very surprising and beautiful method of spinning. The spindle is held loosely in the right hand in which it is rotated, whirling slowly or rapidly as desired. The rotation is achieved by a combined movement of the whole hand and the muscles of the palm, the fingers playing little or no part. Such a combined movement is as indescribable as the movement of the hand of a skilful milker. It is practised by Sudanese Arab tribes throughout the Sudan and also by the Hadendowa of the Red Sea coast. So far as I know, it is used only for spinning wool. The spindle is sometimes a plain stick and sometimes a stick with a whorl at the top, in neither case is there a hook on the spindle.

A. WITHOUT WHORL.—Plate 4 shows a Hadendowa spinner at Sinkat (Red Sea Province) drawing out the thread from wool

manipulated by the left hand while the spindle, a plain stick, is rotating in the right hand. Plate 5 shows the moment of check at the end of the spin just before the spinner commences winding up the thread upon the spindle. It is remarkable how much the speed of the work increases when a certain amount of wool yarn has been wound on the spindle; it would seem that the weight of the wool was an advantage, such as might be secured in other cases by the addition of a whorl. As regards the quality of the spinning I saw no very fine yarn produced by these women, but though coarse it was very even; it was destined for the weaving of blankets or coverings known as shamlas. No doubling of wool was seen. The same method of spinning is described by Dr. Seligman among the Kababish (Kordofan) also on a plain stick without a whorl. He says:¹—"Thread is spun from the hair of goat, sheep, and camel . . . The woman shown [Plate 6] took a few handfuls of goats' hair and beat them with a whippy stick so that the hairs became separated. Then, taking a stiff piece of dried grass stem in her right hand she twisted some hair round it and continuing to twist, while a thread as if by magic grew out of the mass of hair continually fed into it by her left hand. As soon as she had about an arm's length of thread, she discarded the piece of grass in favour of a stick about a foot long around which she wound the thread. She rotated the stick in her right hand and the thread grew more quickly than ever. This thread is used to weave the coarse *samla* which serves as a wrap during a smoke bath, and as a light covering or shelter when travelling. For other purposes the thread has to be twisted double before it is woven. This is done on a *mubram* (from root *b.r.m.*, "to twist"), a thin stick, with an oval piece of wood near one end. This is spun against the thigh."

Plates 6 and 7 are from photographs taken by Dr. Seligman and are published by his kind permission. The first shows the preparation of the wool for spinning by beating it with a stick, the second gives the characteristic attitude of the spinner in this method excellently, only the line of the spindle must be guessed, it was rotating too rapidly to be shown but the outstretched arm shows that she was near the end of her spin.

B. WITH WHORL.—Plate 8 illustrates the same method with the whorled spindle; in this case the whorl was a rounded piece of gourd. (See fig. 4 Plate 37).

The spinner, Sitt Hukm es Sid, of the Ababde tribe, was camping in a little wadi near the ancient Meroe (Kabushiya) when Mrs. Dunham and I went to visit her. Her husband, Ahmed Abdullah Khalil, was pasturing his flocks near by and she was preparing wool clipped from their black goats for the weaving of a shamla. After

¹C. G. Seligman and Brenda Z. Seligman: "The Kababish. A Sudan Arab Tribe." *Harvard African Studies*, Vol. 2, Cambridge, Mass., 1918. p. 176.

beating up the pile of short tufts with a stick, she formed it into a loose roll with her hands, laid it on the round base of a pot (*burma*) turned upside down and weighted it with a stone. The stone no doubt kept the wool steady during spinning and also prevented it from being blown away. Then sitting at her ease on a low stool (*bamba*) she rapidly spun a fine even thread, twirling the spindle, whorl uppermost, in her right hand, while she fed the wool into the thread with the finger and thumb of her left hand, controlling it by pressing on the growing thread as it passed between her second and third fingers. The control over the wool was so efficient that there was usually no pause in the spin from the moment of its beginning until the thread had reached its greatest possible length between the outstretched arms and had to be wound up on the spindle.

The characteristic attitude in winding on the spun yarn to the spindle below the whorl is shown in Plate 10. The spinner in this photograph, Sitt Zeinab, a famous spinner and weaver of camel girths from the Batahin of Abu Deleiq, spun the finest yarn I have ever seen produced by this method. She used a spindle similar to the wool spindle, fig. 4 in Plate 37, only with a square whorl, and she also while spinning kept her carefully teased out clippings of goat hair weighted down with a stone. I should like to give here although it is rather a digression, an instance of this woman's resourcefulness and intelligence. Her most famous achievement was the spinning and weaving of double weave camel girths in colours as well as the more usual black and white ones. I enquired into the making of a beautiful red and blue one, kindly procured for my study by Sherif Yusuf el Hindi; the question was of special interest in a land so devoid of skill in dyeing as the Sudan. I learnt that the red yarn had been made by unravelling certain German shawls imported into the country and re-spinning and doubling the yarn thus obtained.¹ The origin of the blue yarn was even more curious. There is to be seen in materials woven in traditional lengths for the native market an unwoven portion at one end; occasionally these ends are utilized as fringes, but often they are mere waste. Now Sitt Zeinab had a relation, a merchant at Kassala, who saved for her all the unwanted ends of a blue serge he sold there, reputed to come from France. These fragments of thread, many of them only a few inches in length were laboriously respun together (and subsequently doubled) and so she obtained a fine dark blue for her coloured camel girths.

Other observations that I made were among such spinners of the Kababish, Kawahla and other tribes who happened to be sojourning in Omdurman. A variation noted was that sometimes

¹ Cf. the similar practice of Navajo Indians. The source of the scarlet dye of the yarn in certain of their blankets was long a mystery to Europeans; at last it was discovered that the yarn was obtained by unravelling and respinning the wool from a fine Turkish woollen cloth imported by way of Mexico. G. W. James: *Indian Blankets and their makers.* p. 25.

the wool was merely twisted round the pillar of the spindle, and sometimes it was steadied at the lower end by a half hitch. The latter was done by a Hamar woman from Kordofan staying in Khartoum—her spindle was a plain stick with no whorl.

DOUBLING (SUDAN).—Yarn is occasionally doubled by this same method, on the same spindle as that used for spinning, either from two balls of one thread, or one ball of two threads wound up together. I once saw a spinner of the Mesellemya at Aghebab near Rufa'a who spun a doubled thread on a spindle by rotation in the hand after a very singular fashion. She first spun a length of thread, wound it up, started and spun another length and wound that up. Then, taking the ends of both threads she unwound the length and doubled them together into a close cord, reversing the rotation for the purpose; then again she took one end of one of the threads and spun a length on to it and so on da capo. It seems tedious in explanation but when seen rapidly done was as astonishing as a first class conjuring trick. More usually, however, doubling is done on a special doubling spindle by the method of Supported Spindle (Type 5), as described in that section.

EGYPT.—Bedouin weavers on the borders of Egypt also practise this method of spinning. I have seen it at Burg el Arab on the sea coast near Alexandria, among the spinners of the Bedouin Industry which was started by Miss Baird among the Arab refugees during the War. Plate 9 shows one of these spinners, with the spindle in her right hand, while, as is common here, she gains a freer use of her left hand for drafting the wool by holding it between her toes.

Not all the spinners of the Bedouin Industry practise this method. I saw many who were using the method of Suspended Spindle (Type 6) common throughout Egypt among the fellahin; my observations were not extended enough for me to say whether these were Bedouins who had learnt this way of spinning from the fellahin at the Industry or whether they habitually practice both methods.

The characteristic attitude in spinning by rotation in the hand with the wool again held between the toes is well shown in Plate 11, of a drawing by Frederick Goodall, R.A., in the British Museum.

SPECIAL VALUE OF THE METHOD.—The peculiar value of this method of spinning would seem to lie in its command over short stapled wool. I first realized this when trying to persuade some spinners to spin me some wool from pure bred sheep at the Veterinary Station, Khartoum. The women complained that the wool was too long and that it was almost impossible for them to spin it. This surprising preference for their own clippings of inferior sheep's wool and still shorter tufts of goat hair seemed to me at the time to indicate some special adaptation of their method of spinning to this short stapled material, but I had nothing to check this idea by as

these Sudanese women knew but the one method of spinning. In Trans Jordan, I have been meeting Arab women conversant with a very similar method of rotation in the hand, and also with Supported Spindle and Suspended Spindle and they tell me that they prefer to use the former for goats' hair, and the two latter for the longer stapled sheep's wool. In the latter methods the wool is drafted by both hands, while the spindle in the one case rests, and in the other is dropped, but in the former the right hand is fully occupied rotating the spindle while the left hand just flicks up the short tufts of hair into the growing thread. Something like the drafting of the other methods on a very small scale can be obtained either by putting the wool or hair under a stone or holding it between the toes. But in either case there is no pause for drafting at all, and it is this peculiarity which makes the method so interesting, for attenuation and twisting are both going on together (accounting for the even quality of thread produced), and the spinning proceeds with a magical smoothness most fascinating to the beholder.

TYPE 4.

GRASPED SPINDLE.

In this method of spinning, a prepared rove is passed through a ring or over a forked stick or other support, and is spun on a large spindle grasped in both hands. We have no modern instance from our area where it is known only from the Tomb pictures of Ancient Egypt. In fact we can cite only two instances of its use for comparison, the wool-spinning of the Salish Indians and the doubling of yarn in the Province of Burgos, Spain. According to Miss Kissell,¹ who describes the former, such spinning is very slow, attenuation and twisting are separate processes, and the yarn is consequently uneven. The latter example is recorded by Mrs. Robert Aitken, who, in a letter to Mr. Carline says that "the yarn is passed over a large nail in the lintel of the doorway." In the photograph which she sent to Bankfield Museum the spinner is seen grasping the spindle, whorl uppermost, in both hands. The method is more suitable for doubling, I have myself found a somewhat similar procedure useful when doubling rug yarns which were too coarse for twisting on a spinning wheel, passing my yarns over the top of a door. In Ancient Egypt the method was presumably used for either, or both, the respinning and the doubling of flax yarns.

ANCIENT EGYPT.—The Grasped Spindle is represented in scenes from the Tombs of Baqt and Khety at Beni Hasan of the Twelfth Dynasty and in the Tomb of Thut-Nufer at Thebes of the Eighteenth Dynasty.

¹ *Op. Cit.* Fig. 2 and pp. 21-23. Also: "A New Type of Spinning in North America." *Amer. Anthropologist*, vol. 18, No. 2, 1916.

In both the Tombs at Beni Hasan¹ there are two spinning scenes close together (see Figs. 2 and 7, Baqt, and 3 and 8, Khety). In Figs. 2 and 3, three men are shown spinning, apparently by three different methods; the first on the left may be using the method of Suspended Spindle (q.v.), the second that of Supported Spindle (q.v.), while the third uses that of the Grasped Spindle. He kneels back on one heel, holding the spindle in both hands, spinning from a rove or thread coming from a pot and passing over a forked stick. He may be respinning a thread partly prepared by the two other spinners or he may be doubling two of their threads. Against the latter is the fact that only one thread is shown in the pictures; still,

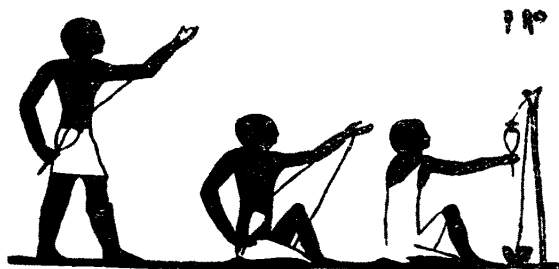


Fig. 2.—TOMB OF BAQT. (NEWBERRY).

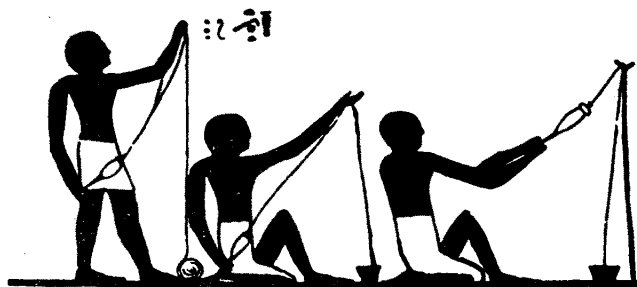


Fig. 3.—TOMB OF KHETY. (NEWBERRY.)

when a ball of two threads is wound up for doubling (as is usual in the modern Egyptian and Sudanese practice) they cannot often be clearly seen to be double as they come from the ball. The suggestion of doubling (in fact cording) would agree best with the usual interpretation of the scene, i.e., that it represents the making of twine. Cailliaud,² also, in his drawing of the subject, shows three whorls on the spindle, two above the cone of yarn and one below, and this would indicate a heavy spindle, suitable for doubling.

The third representation (Fig. 4) of Grasped Spindle is from Tomb 104 at Thebes³. There, in the inner room of the cellarage of the House of Thut-Nufer, "we see the operations of spinning and

¹ P. E. Newberry: *Beni Hasan. Pt. 2. Plates 4 and 13.*

² F. Cailliaud: *Recherches sur les Arts et Métiers., etc. 1831. Pl. 17a.*

³ N. de G. Davies: "The Town House in Ancient Egypt." *Metropolitan Museum Studies. Vol. I. pt. 2. May 1929, p. 234, Fig. 1.*

weaving being carried on. To the left of the pillar two women (?) seem to be separating out the fibers from stems of flax. Two other women work these short lengths up into coarse thread and wind it into a ball. A woman then takes this ball and, putting it into a bowl where it can turn over and over, spins a finer and more even thread out of it on to a spindle, passing it through a ring in the ceiling to give it the required tension. It will then be transferred to a shuttle¹ and be in readiness for the loom, which is in use in another part of the room."²

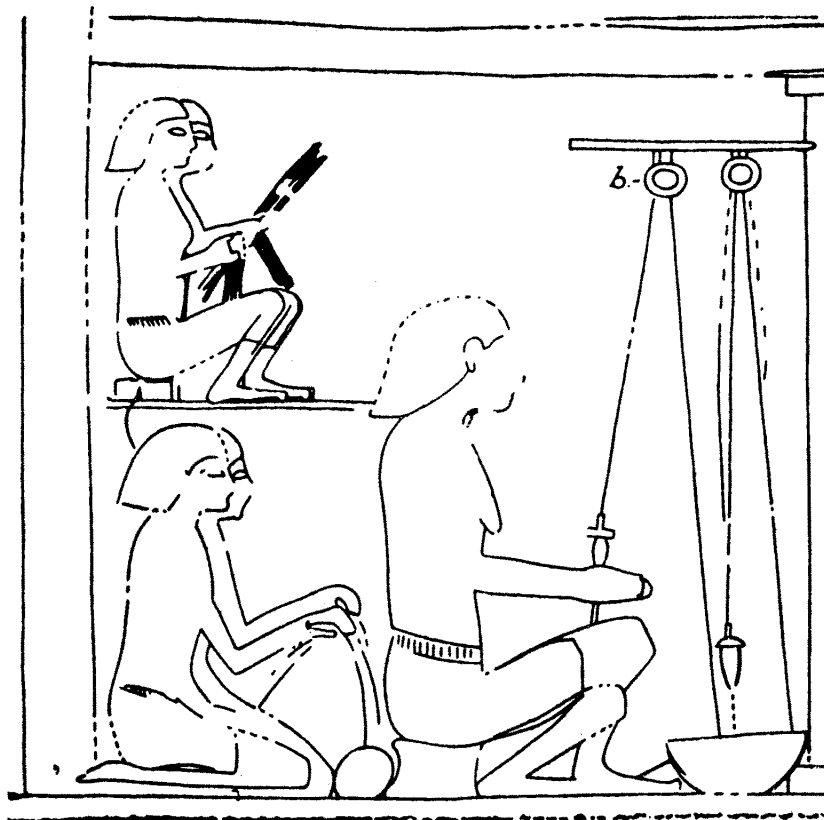


Fig. 4.—"HOUSE OF THUT-NUFER," TOMB 104, THEBES, XVIIIth DYN. (DAVIES).

In this scene the first women referred to may be considered to be occupied in some equivalent for the very necessary hackling or combing of the flax before spinning begins. They may be doing this by simply teasing the fibres out with their hands, or they may be using a comb, it is not clear, but they appear to have some instrument in their hands. Their attitude is very similar to that of the woman in the Tomb of Daga, (Fig. 5) who is certainly using

¹ I think the word "spool" is to be preferred to shuttle for the weft carrier used on a vertical loom.

² N. de G. Davies. *Op. Cit.*, p. 239.

TYPE 3 (B).

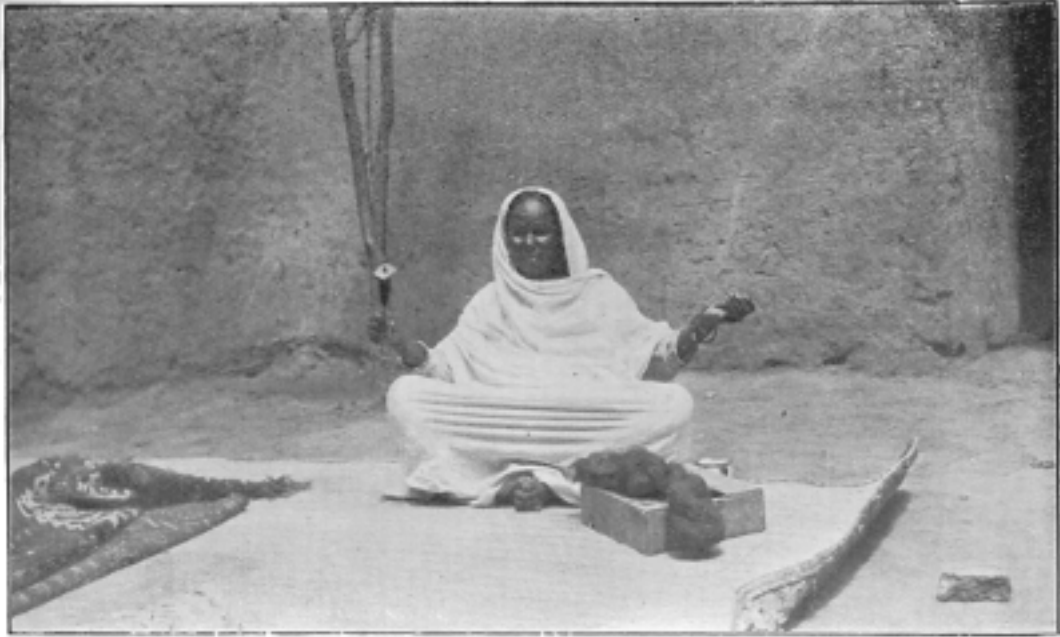


Plate 10.—BATAHIN. WINDING ON WOOL WHILE SPINNING. ABU DELEIQ, SUDAN.



Plate 11.—BEDOUIN, EGYPT. SPINNING.
PENCIL DRAWING, (ABOUT 1858) BY FREDERICK GOODALL, R.A., IN MS. DEPT., BRITISH MUSEUM.

TYPE 5 (A). SUDAN.



Plate 12—BULINARTI ISLAND, NEAR ARGO.

TYPE 5 (B). SUDAN.



Plate 13.—FELLATA WOMAN SPINNING AT MAIWURNO
(BLUE NILE PROV.)

TYPE 5 (A) DOUBLING WOOL.



Plate 15.—BEDOUIN, BURG EL ARAB, NEAR ALEXANDRIA

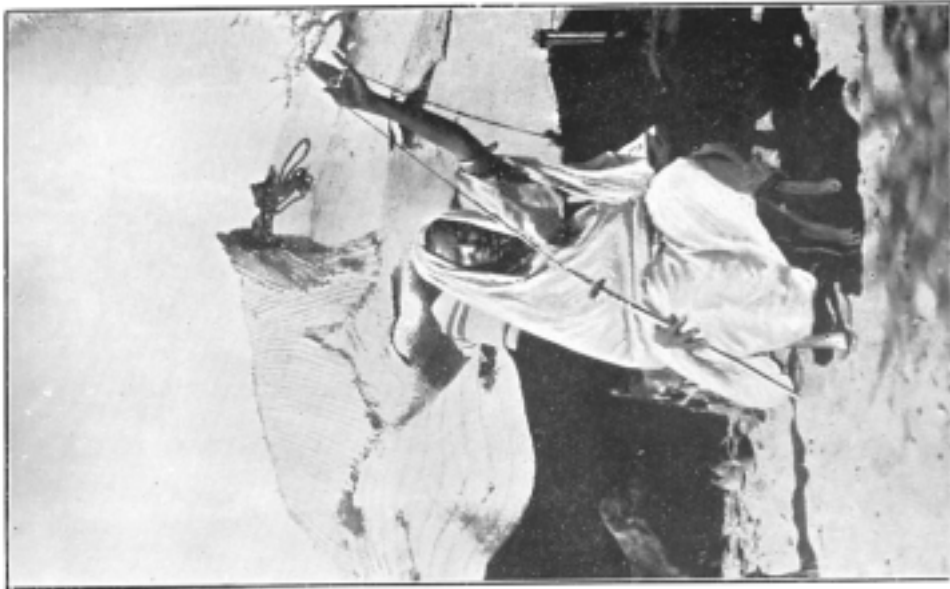


Plate 14 — ABABDE, KABUSHIYA, SUDAN.

TYPE 6 (A). ANCIENT EGYPTIAN.

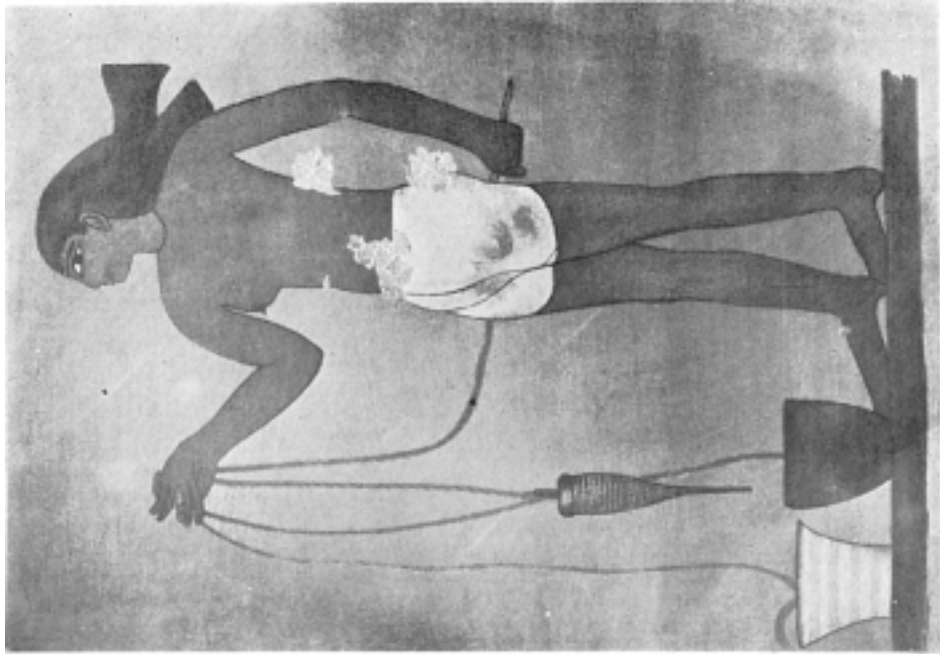


Plate 16.—WALL-PAINTING, TOMB OF CHENEMHOTEP (NEWBERRY).



Plate 17.—WEAVING MODEL, TOMB 575, BENI HASAN, XI.-XII. DYN. LIVERPOOL MUSEUM.

some instrument which may be a comb and the woman in the Tomb of Baqt (Fig. 7) who perhaps may also be doing so. The second couple of women engaged in making the real 'handspun' can also be compared with others similarly engaged in other Tomb scenes (see the Section on Flax Spinning in Ancient Egypt, Type 6A). The woman spinning with the Grasped Spindle holds it, as is proper, with both hands. There is also another spindle hanging from a second ring up aloft, which the spinner must have just left rotating while she twirls the one between her hands. The value of the rings (or other similar contrivances) is to give a longer spin. Of course in real life the bowl in which the ball or balls are placed could not be placed immediately under the rings as it appears to be, or entanglement would ensue, but a little distance away (cf. also page 18). It is interesting to note that the thread coming down to the second spindle appears to be double. Grasped Spindle is such a suitable method for doubling, that with this indication to confirm it, I should like to suggest that the woman here is making a 2-ply warp thread, well corded up, of the kind so familiar in primitive textiles.

TYPE 5. SUPPORTED SPINDLE.

A. The spindle is supported by resting lengthwise on the right thigh. Spindle usually large. Chiefly used for wool.

B. The spindle is spun while standing erect on the ground, or in a shell or bowl or cup. Spindle usually small. Chiefly used for cotton.

5 (A).—It is a delicate point whether this should be regarded as a more advanced method than Type 3. In Type 3, as already noted, drafting and twisting are simultaneous. In 5 (A) they are separate, the spinner drafting between both hands while the spindle rests on the right thigh, then rotating the spindle by rolling it on the thigh. Therefore, one would expect, theoretically, that the product of Type 3 would be better, because yarn is generally stronger and more even when twist is put in while drafting, and indeed some of that spun in the Sudan by this method is remarkable in quality. Still, Type 5 (A) can be used for any quality of wool, whether short or long, and what is more important from the evolutionary point of view has more possibilities of development about it, in fact, one can see, when observing it or practising it, what a short distance there is between it and the most advanced method known—Suspended Spindle. One has only to raise the hand slightly and lift the spindle free from the thigh and there it is swinging in the air. Something of the same kind might also be said about Type 4. But again it can be seen how close this method is to Suspended Spindle, it is quite easy to drop the spindle if desired, as, for example, is being

done in the House of Thut-Nufer, (see Fig. 4), and this of course can never be done with Rotation in the Hand.

SUDAN.—The only instance I know of this method in the Sudan is at Bulinarti Island, near Argo (Dongola Pr.), and there it was in fact practised together with Suspended Spinning of a very rudimentary type. The women shewn on Plate 12 sat on the ground, with black goats' wool piled in gourds in front of them. They were spinning it in the grease, without beating it up, or teasing it or other preparation. Their spindles had rather flattish whorls cut from gourd rinds, and rather heavy wooden stems with notches or hooks cut at the top. They spun by rolling them on the thigh, adding the wool required and then thinning (drafting) it with both hands while the spindle rested on the thigh with the end of the stick just touching the ground. After the roll on the thigh, one woman dropped the spindle in a short drop and spin, but the others merely went on rolling with a rest for drafting. When winding the spun yarn on to the spindle they always started by winding it on above the whorl, and subsequently unwound it and rewound it below the whorl; this is to ensure carefull winding. The yarn seen here was coarse and even; it was destined to be woven into shamlas for the production of which the island has some reputation in the neighbourhood.

MODERN EGYPT.—No record, but probably exists. I should like to take this opportunity to say that I feel my notes on Spinning in Egypt are very inadequate, there remains much to be discovered and studied there in this craft as in many others.

ANCIENT EGYPT.—In the scene at Beni Hasan¹ described under Grasped Spindle, and illustrated in Figs. 2 and 3, the second man spinning sits back on one heel drawing a rove from a pot through his left hand and spinning with a spindle held in his right hand, and his attitude seems to me like that of Supported Spindle. Luise Klebs² comments on this attitude as unsuitable for Suspended Spindle, pointing out that with a rove, "spinngut," rising so perpendicularly from the pot as is here represented the spinner could not have dropped the spindle without an immediate entanglement of the threads (see also page 17). This would be an additional argument for taking the picture to be that of Supported Spindle, but I am loth to lay stress on it, because it might also apply to scenes where spindles are obviously being dropped and spun in almost as dangerous situations. I rest my opinion on the way the spinner is sitting with his hand placed as if about to roll the spindle on the thigh; how like the attitude is to that of the modern users of the method may be realized by comparing Fig 3. with Plates 12, 14 and 15.

¹ Newberry, *Op. cit.* Plates 4 and 13.

² Luise Klebs, *Die Reliefs und Malereien des Mittleren Reiches.* Heidelberg, 1922. pp. 125-26.

DOUBLING.—This method is indistinguishable from the method commonly used for doubling yarn (wool and cotton) in the Sudan (see Plate 14) and that used for doubling wool at Burg el Arab, Egypt (see Plate 15). The spindles used for doubling wool are usually large and heavy with a large whorl and a notch cut for a hook in the stem above the whorl (see figs. 1 and 6 on Plate 37), those used for cotton yarn which usually have an oval whorl (see Plate 38), are somewhat lighter, but still very large compared with the elegant spindles used for spinning cotton. The doubling is sometimes done from two balls of single thread sometimes from one ball of two threads wound loosely together; the woollen yarn is usually moistened before doubling. The spindle is rolled on the thigh and the procedure exactly resembles that already described for Supported Spindle spinning except that of course there is no drafting and the roll on the thigh is in the reverse direction to that used for spinning; for example, if the roll has been from hip to knee (as is common in the Sudan)¹ the roll in doubling will be from knee to hip. This doubling is always persevered in until the yarn is very tightly corded and thereby rendered extremely strong, an essential for the warp of the class of goods to be woven, such as tent cloth, saddlebags, and girths for horses and camels, all of which have to stand very hard wear. The only doubling of cotton that I have myself seen was for the making of a continuous heddle for a cotton loom, for which purpose a strong thread was also desirable.

5 (B).—This is a more advanced type than 5 (A) because the position of the spindle frees one hand so that drawing and twisting can go on while it is rotating in the shell or cup or bowl used. It is the chief way of spinning cotton in many parts of the world. That the thread for the famous Dacca muslins of India was spun in this way proclaims its excellence for producing a very delicate fine thread. In the Sudan, so far as I know, it is only used by Fellatas, immigrants from Bornu and Sokoto in Nigeria. Plate 13 shows a Fellata woman spinning cotton at Maiwurno, once a picturesque village with red clay buildings in the style of Kano, now under the wave of the lake above the Sennar Dam. The spindle used, fig. 2, Plate 37, had a fine cane stem and a little clay whorl painted white with mauve pink patterns on it²; it was rotated by a twirl with the fingers and was spun whorl downwards in the half of a gourd on the ground. The photograph was taken at the moment when the spinner was drafting with both hands while the spindle was rotating in the gourd.

¹ *It is curious that, as far as my observations go, the roll on the thigh practised during spinning by Arab women in Trans Jordan is in the reverse direction to that common in the Sudan, that is to say, the roll in spinning is from knee to hip and the roll in doubling is from hip to knee.*

² *[A Hausa spindle and whorl from Nigeria similar to this is in Bankfield Museum. It was collected about 1913-14 by P. Amaury Talbot and given to the Museum in exchange by the Pitt Rivers Museum, Oxford where there are other examples. G.R.C.]*

TYPE 6.
SUSPENDED SPINDLE.

We come now to a method of hand spinning never surpassed for the production of a fine even thread. It was the method of Ancient Egypt, of Greece and of Rome, it was for centuries the method par excellence of the whole of the Old World, and indeed is still in use in many places till this day. Why had this way of spinning such pre-eminence? In the last variety described, Supported Spindle (B), where the spindle rotates in a cup or bowl, drafting and twisting are performed simultaneously and there is consequently great gain in speed and in quality. Now in Suspended Spindle instead of being checked or guided during rotation the spindle hangs freely in the air. Obviously it is easier to spin a very delicate filmy thread with the spindle supported in the cup because the thread does not have to bear the whole weight of the spindle and the whorl; the thread for the Dacca muslins, spun in this way, has become proverbial for its fineness. But it is the very weight of the spindle that gives a very great advantage to the method of Suspended Spindle, because the hand of the spinner *draws* the rove while the spindle by its own weight drafts it still further by *stretching* it. This pull at both ends of the thread, called double drafting, as noted in the introduction (p. 8), always makes for evenness of thread, the simultaneous drafting and twisting enhances this, and the free whirl of the spindle ensures a regular twist and as close a one as is desired. For speed, also, this method has never been surpassed.

It is natural to find variations in a method which has been used for centuries in many different lands and for a variety of materials, and these should be carefully noted by the student as they may give the key to pages of past history. The following are the principal points to observe:—

PREPARATION OF RAW MATERIAL.

This of course should be noted whatever the method of spinning, but in Suspended Spindle is of some elaboration, teasing, combing or carding being often used, and the material being formed into a loose roll like the Scotch "rolag," or into a long rove. Still, even in this method next to no preparation may be made and the wool may be spun "in the grease," the flax merely hackled into a bunch, or the cotton pulled straight from the seed.

USE OF DISTAFF.

A distaff, or instrument specially made for holding the raw material while spinning is very often used in this method, especially in Europe, but sometimes it is absent, and the raw material is simply held in one hand. When a distaff is used, it may be of varying shapes, and it may be held differently, either in the hand or under the arm, or stuck into the belt of the spinner, and so on.

Type 6 (A). ANCIENT EGYPTIAN.



Plate 18.—MODEL OF SPINNING AND WEAVING GROUP, FROM TOMB OF MEHENKWEFRE, XI. DYN., THEBES. CAIRO MUSEUM.

TYPE 6 (B). FLAX SCUTCHING. NAHYA, GIZA PROV., EGYPT.



Plate 19.—BEATING THE FLAX WITH A WOODEN MALLET ON A STONE.



Plate 20.—REMOVING THE TOW BY BEATING THE BROKEN FLAX
WITH A FLAT WOODEN "BAL."

TYPE 6 (B). PREPARING FLAX. NAHYA, EGYPT.



Plate 21.—HACKLING THE FLAX THROUGH A COMB WITH METAL TEETH.

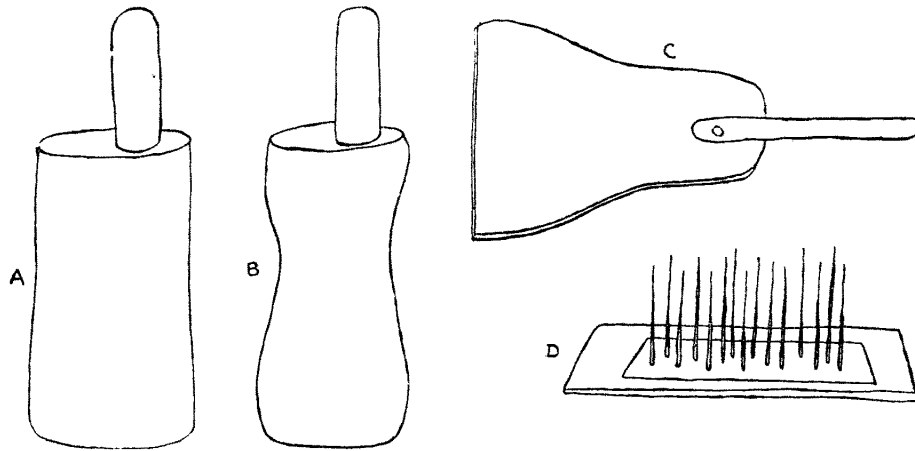


Fig. 9.—TOOLS USED. (See Plates 19-21).

- A and B. MALLET (UNUSED AND USED), *el durs*.
- C. SCUTCHING BLADE, *el minfada*.
- D. COMB, *el misht*.

TYPE 6 (B). SPINNING FLAX "THROUGH THE MOUTH." NAHYA, EGYPT.



Plate 22.



Plate 23.

SHAPE OF SPINDLE.

Spindles used in this method often have a thread notch or groove, cut in the top of the stem, or a metal hook, and one, or more rarely, two or more whorls. The whorl is usually placed at the top of the spindle immediately under the notch or hook, or at the bottom, but there are instances of the whorls in almost any position on the stem. The stem, or pillar, of the spindle may vary in shape and size, and so may the whorls, and the whorls may be of many different materials.

ROTATION OF SPINDLE.

The spindle may be rotated in different ways, the chief of which are :—

- (a) Twirling with the finger and thumb and let swing.
- (b) Rolling with right palm against thigh and let swing.

According to the position of the whorl the spindle may be spun either whorl downwards or whorl uppermost.

The account of this method will be arranged under the following heads :—

- A. Flax Spinning. Ancient Egypt.
- B. " Modern Egypt.
- C. Wool Spinning. Modern Egypt.
- D. Cotton Spinning. Sudan.

A. FLAX SPINNING IN ANCIENT EGYPT.

Ancient Egypt was the land of fine linen, and fine linen means fine spinning. Much has been discovered to sustain this fame from the first dynasty onwards, pieces so delicate of thread as to deserve the ancient saying "woven of air." There must have been spinning even earlier than the first dynasty for whorls have been found from the prehistoric period¹ (Plate 41, fig. 3), but whorls can teach us little more than that spindles were used and textiles, by their excellence, can but point to an advanced method of spinning². We have to wait till the time of the Middle Kingdom before we can learn with certainty what the method was.

Our knowledge chiefly comes from the representations in the XIIth Dynasty Tombs of Baqt, Khety and Chnemhotep at Beni Hasan, Tehuti-Hetep at El Bersheh and that of Daga at Thebes; from the weaving model found in the XIth Dynasty Tomb of

¹W. H. Flinders Petrie: *Prehistoric Egypt*. p. 41, Plate XXVI.

²For detailed information on the fine yarns of the linen from mummy wrappings see T. W. Fox on the textiles, pp. 65-71 of Miss M. A. Murray's "The Tomb of Two Brothers" (Manchester Museum Publication No. 68, 1910). Also G. Wainwright in Petrie: *The Labyrinth, Gerzeh and Mazghuneh*, 1912, p. 6; the work of W. W. Midgley in Petrie: *Heliopolis and Kasr Ammar*, 1915, pp. 48-51, and in H. Ling Roth: *Ancient Egyptian and Greek Looms*, pp. 26-29 (Bankfield Museum Notes. Second Series, No. 2, 1913); and that of his son T. Midgley in G. Brunton and G. Caton-Thompson: *Badarian Civilization*, 1928, pp. 64-67.

Mehenkwetre at Thebes now in the Cairo Museum, and a smaller one found at Beni Hasan now in the Liverpool Museum.

It is generally accepted that these representations all show the spinning of flax; Ancient Egypt was nearly as famous for her woollen stuffs as for her linens, but no hint has come down to us to make it certain whether the method of spinning was the same as for flax or not.

The description of the scene in the Tomb of Daga is given first as, although it is much defaced, several important points about the method of spinning can be most clearly seen there.

TOMB OF DAGA.¹

In this scene (Fig. 5), four women are preparing material for a spinner who turns her head towards them and adjures them, according to the hieroglyph above, "Come! Hurry!"

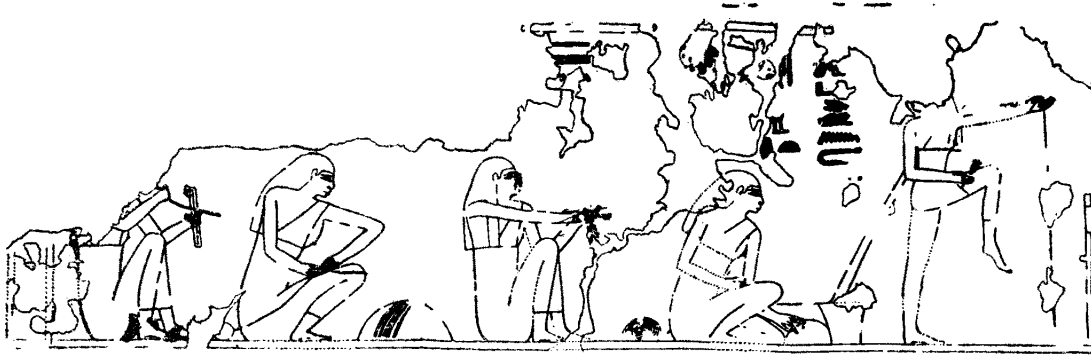


Fig. 5.—TOMB OF DAGA. (N. DE G. DAVIES).

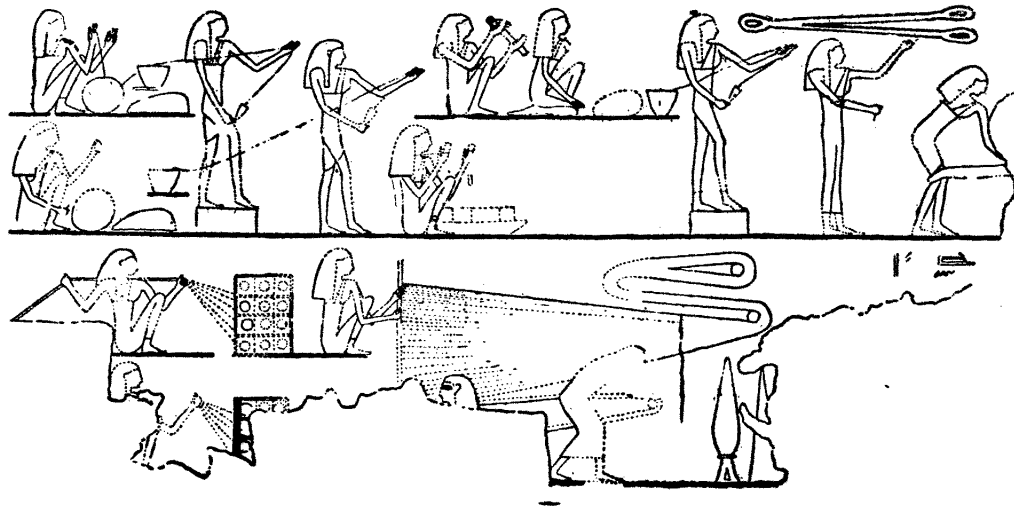
The first woman on the left has some instrument in her hand like two sticks coloured red, through which she draws "a thread or stem of flax." This may be some equivalent for part of the process of scutching, the cleansing of the fibres from tow. Or, as is suggested by a similar instrument seen in the Tomb of Tehuti-Hetep, which appears like a comb at the top, it may represent hackling, the combing of the flax. Unfortunately the instruments are not perfect enough to make either certain.

The second woman is most interesting for she is shewn twisting a thread on her thigh, and this gives the key to the whole meaning of the series of scenes where women sit preparing material for spinners. Hand spinning, the most primitive of all ways of making a thread (see page 9), has here survived as a preparation for a superior method. The thread so produced is probably just twisted enough to hang together and form a suitable rove for respinning on the spindle.

¹N. de G. Davies : *Five Theban Tombs*. 1913, Plate XXXVII, and p. 34.

The third woman holds flax fibres in her hand crosswise, considered by N. de G. Davies to be "a teasing of the fibres;" above her head is the word *ssn*. Another suggestion has been made by Luise Klebs¹, that this may be a "gewebe probe," a testing of the threads by plaiting them in the hands to see if the weave will be right; but the former explanation seems preferable to me. The fourth woman has her hand on a ball ready for the impatient spinner at the end of the row.

This last spinner stands spinning with two spindles, one hanging in the air while she rolls the other on her thigh. One thread appears to come from a coil on the ground, pass into a pot behind her and up to her, the other thread comes from the same pot, and both threads are controlled in the left hand. The surprising feat of keeping two spindles in motion is rendered credible by the consideration that the spinner is using the partly spun thread or rove prepared for her by her four helpers (*v. infra* p. 29). I take it that the four helpers are making the two threads or roves that the spinner afterwards re-spins; on this interpretation the first and third woman are doing the same thing, teasing out fibres (equivalent to hackling or combing), while the second and fourth are the hand-spinners who make and wind their product into balls. We shall see later that similar marvels of dexterity shewn at Beni Hasan are preceded by the same careful preparation by hand of a rove, as is also the simpler spinning of El Bersheh.



—Tomb of Tehuti-hetep. Date about 1939—1849 B.C. From Professor Percy Newberry's *El Bersheh* I. Pl. 26.

Fig. 6.—TOMB OF TEHUTI-HETEP. (NEWBERRY).

TOMB OF TEHUTI-HETEP.² (Fig. 6).

Here three spinners are shewn standing, each spinning with one spindle and drawing the rove from a bowl on the ground behind

¹Klebs: *Op. cit.*, p. 127.

²Newberry: *El Bersheh*. I. Plate XXVI. Page 35.

her. Two of the spinners stand on a raised platform to obtain a longer spin.

Behind each spinner sits another woman preparing the rove for her, each has a block in front of her, and two have large balls already wound. The first "preparer" on the left, has the end of a thread in her mouth, possibly to moisten it, this thread passes to the bowl and again up to the spinner. The other spinners draw their thread from the bowl without these complications. Accompanying the spinners are the extremely interesting and unique scenes of warping, above on the right a woman is warping on the wall from the spindle in her hand, one thread at a time, as the women of the Sudan do to this day, while below more advanced methods are shown—a frame capable of warping 12 threads at a time very similar to some in use at Kirdasseh (Giza Pr., Egypt) at the present day, and women manipulating what is evidently a much longer warp than the simple one above.

TOMB OF BAQT.¹ (Fig. 7).

The superintendent of the weavers, *m r . . . tt*, stands first, then a woman saying (*ir kst*) "work away!" Then follow, a woman with an instrument in her hand and above her written *s'sn*, and three other women working at the flax with their hands, having blocks in front of them and the word *m'sn*, written above. The spinners they are supplying are three, a boy standing on a high platform spinning with two spindles and two women also spinning with two spindles. Each spinner has two pots in front from which two threads are drawn, and the threads in each case are held in the left hand. The differing attitudes of the three spinners deserve study. The boy has one spindle revolving in the air while the other is held in the right hand close to the left hand, this shows, I think, that he has just wound up the yarn spun on to the spindle in his hand and is about to draw more rove from the pot to be spun on it. The first woman raises her knee and is rolling the spindle in her right hand on the right thigh while the other spindle swings from the left hand, and the second woman is just at the end of her draw and has not yet raised her knee from the roll. From the hieroglyphs there would seem to be some difference in the spinning of the boy and the spinning of the women, for the one has the word *dqr* above and the other *st*.

TOMB OF KHETY.² (Fig. 8).

The scenes here vary but slightly from those in the Tomb of Baqt. We see again first the superintendent and the woman crying "work away!" The woman sitting on the ground next to them

¹Newberry: *Beni Hasan. Part 2. Tomb 15. Plate IV., p. 47.*

²Newberry: *Beni Hasan. Part 2. Tomb 17. Plate XIII., p. 57.*



Fig. 7.—TOMB OF BAQT. (NEWBERRY).

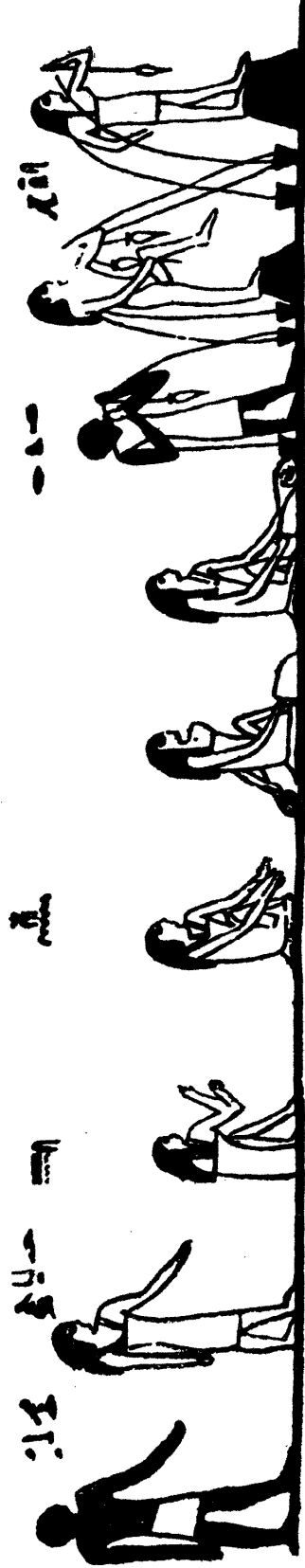


Fig. 8.—TOMB OF KHETV. (NEWBERRY).

probably held again the same instrument¹, but it is destroyed, the three other preparers of material for the spinners again work at the fibres with blocks in front of them, one having in addition a large ball of thread (rove) already wound up, and another a kind of loose coil. The three spinning figures follow as before. Their attitudes can best be understood from the drawing by Cailliaud². The boy here spins with two spindles drawing two threads from two pots, the threads pass over his left shoulder to be controlled in the left hand, one spindle is dropped, and the other is held in the right hand again just at the moment of completing the wind up. The woman in front of him draws two threads from two pots behind her, and two from a heap of material in front which she doubles on two spindles. One spindle swings in the air, the other is held in the right hand, while her knee is most energetically raised for the roll. Apparently unless this is a mistake of the Ancient Egyptian draughtsman, she is raising the left knee, and rolling the spindle against the inside of the left thigh, instead of as in the other scene rolling it on the outside of the right thigh. The third woman, who stands on a raised platform, draws two threads, one from a pot, and the other from a heap behind her, and re-spins them on two spindles. Again the words vary—*dqr* over the boy, and *st* over the women.

TOMB OF CHNEMHOTEP.³ (Plate 16).

Near the well-known weaving scene a woman is preparing rove, *m's'n*, for a spinner who works under the direction *st*. From the charming coloured picture⁴ she appears to be a young girl; in her right hand she holds two threads drawn from two vessels in front of her, and a spindle swings in the air hanging from this hand. In the left hand she appears to hold a second spindle hidden behind the right side of her body, an extremely uncomfortable attitude. Points of interest in this painting are the attempt made to show the position of the fingers of the hand while holding the threads, the strong twist shown on those parts of the threads already spun by means of the spindles, and the line indicating a spiral groove on the top of the stem of the spindle above the whorl (see also page 30.)

WEAVING MODEL FROM TOMB 575, BENI HASAN.⁵ (Plate 17).

The figure of the spinner in this model holds a spindle in the right hand while another drops from the left hand revolving in the air. Behind her used to stand a "tension pot" but in the course

¹Above this woman is *s's'n* above the next *m's'n*.

²F. Cailliaud: *Op. Cit.* Plate 17A.

³Newberry: *Beni Hasan. Pt. 1, Plate XXIX.*

⁴*Ibid.* Pt. 4, Plate XV. (And see Howard Carter's description, *Ibid.*, p. 4).

⁵J. Garstang: *Burial Customs of Ancient Egypt.* London, 1907. Page 132-3 and Fig. 131.

of years this has been lost and does not appear in Plate 17, though shewn in Garstang's illustration in the work already referred to. Two weavers are seen working at a loom pegged out on the ground.

WEAVING MODEL FROM THE TOMB OF MEHENKWETRE.¹
(Plate 18).

In this beautiful model of a weaving room three women sit with their backs to the wall, preparing material with their hands for three spinners. These women have blocks in front of them, and blocks at first sight suggest a very necessary process in the preparation of flax, the breaking during scutching which in primitive countries is effected by beating it with a mallet on a stone or block of wood. The women, however, have no mallets in their hands, and from certain tomb scenes² it seems probable that this beating was carried out by men, as is the case in Egypt to-day. Ling Roth³ after a discussion of a possible comparison between these blocks and the *ἐπίνητρον* or *ὄνος* used by Greek women, points out that the material appears to come from under the blocks and concludes that they were used to hold down the material as it was drawn upon.

Apart from such assistance as the blocks could give the three women have only their hands with which to prepare the fibres and make them into the long rove (thread) which we see used by the three spinners. The latter have pots beside them from which they draw their rove, which we imagine to have been in the form of a ball, and these pots are often referred to as "tension pots."

Now when anyone is using a pot (or basket) in this way, whether when respinning a yarn or when doubling two yarns together, as I have experienced myself, the ball is apt to be pulled out of the pot. Luise Klebs⁴ has consequently suggested that there must have been covers on the pots with holes in them through which the threads passed, thus preventing the balls from jumping out. Peet and Woolley⁵ describe a form of stone bowl with handles or loops inside at the bottom of the bowl found at Tell el Amarna which they believe to have been used in spinning as a device to the same end "a thread being drawn up through each loop from the material heaped in the bowl." Such bowls are only a deeper form of a well known type of pot lid, but it is quite conceivable that they may have been adapted by ingenious craftspeople and used in this way. There is a very good example of such a bowl in pottery found by Petrie, also at Tell el Amarna, now in Manchester Museum (No. 1992) which is quite deep enough to have served the purpose suggested. But we cannot find the clinching evidence on the subject.

¹*Ancient Egypt, 1921, Pt. IV., and Bull. of Metropol. Mus. New York. Dec., 1920.*

²*Newberry: Beni Hasan, Pt. I., Plate XI.*

³*H. Ling Roth: "Models of Egyptian Looms." Ancient Egypt, 1921 (Pt. IV), p. 98.*

⁴*Klebs: Op. cit.*

T. E. Peet and L. Woolley: The City of Akhenaton, Pt. I., p. 61.

The spinners in this model again are all spinning with two spindles held one in each hand, and the left hand, in addition to the spindle, holds the strands of rove drawn from the pots. It appears as if the strands of rove (in this case not painted lines as on the Tomb scenes, but real threads) are drawn from each of two pots, and two strands from the third. Two of the women raise the right knee as if just about to roll the spindle held in the right hand on the thigh, so that although the spindle is not actually dropped and spinning in the air as in the Tomb scenes, we can take it that the same method was used in both. It has been pointed out to me by a spinner that one of the figures in this model has the thread wound two or three times round her hand and that this is indicative of winding up. It is the practice in English hand spindle spinning to wind the spun length round the left hand before winding it on to the spindle because it is of importance that the winding on should be firm and regular and this way of holding the yarn gives good control over it¹. Such details show both how careful the spinners of old were and the artists who faithfully tried to reproduce their gestures. On one wall two women are warping, this is very similar to the Tomb painting in Fig. 6, whilst in the middle of the floor are two horizontal looms with the beams pegged out, much as the Bedouin loom is to-day, with single rod-heddle, shed-sticks and "sword" beater-in². These looms are similar to that indicated in the Beni Hasan model in Plate 17.

METHOD OF SPINNING IN ANCIENT EGYPT.

The lively Tomb pictures leave no doubt of the method used, it is clearly "Suspended Spindle," for the spinners stand with spindles swinging in the air. In the Beni Hasan model the spindle is also seen in the air, and in the Mehenkwtre model two of the spinning figures raise the right knee as though just about to roll the spindle on the thigh and drop it.

PREPARATION OF RAW MATERIAL.—In the Tomb scenes and in the Mehenkwtre model, rows of women are seen preparing flax fibres by hand. This may be regarded as hand spinning, and the final product as a partly spun thread or rove. The spinners in all cases are seen using this prepared rove. This careful preparation and excellent method of spinning no doubt contributed much to the high quality of Ancient Egyptian linen.

SPINNING WITH TWO SPINDLES.—This remarkable feat has aroused surprise in all students of the spinning scenes. No

¹*cf.* K. Grassett: *Complete Guide to Handspinning*. Vol. 1. pp. 19-20. *The London School of Weaving*.

²For fuller description see H. Ling Roth: *op. cit.*, pp. 97-98 and G. M. Crowfoot, in the same work, pp. 98-101.

TYPE 6 (c). SPINNING WOOL. EGYPT.



Plate 25.—NAHYA, GIZEH PROV



[Photo by G. R. Cantine.
Plate 24.—AT SHEIKH ABD EL QURNA, THEBES.

TYPE 6 (D). KHARTOUM.



Plate 26.—DRAWING WEFT THREAD WHILE TWIRLING THE SPINDLE IN THE HAND. USUAL POSITION WITH PALM *downwards*.

TYPE 6 (D). COTTON SPINNING. OMDURMAN, SUDAN



Plate 28.—EVENING THE THREAD WHILE THE SPINDLE REVOLVES.

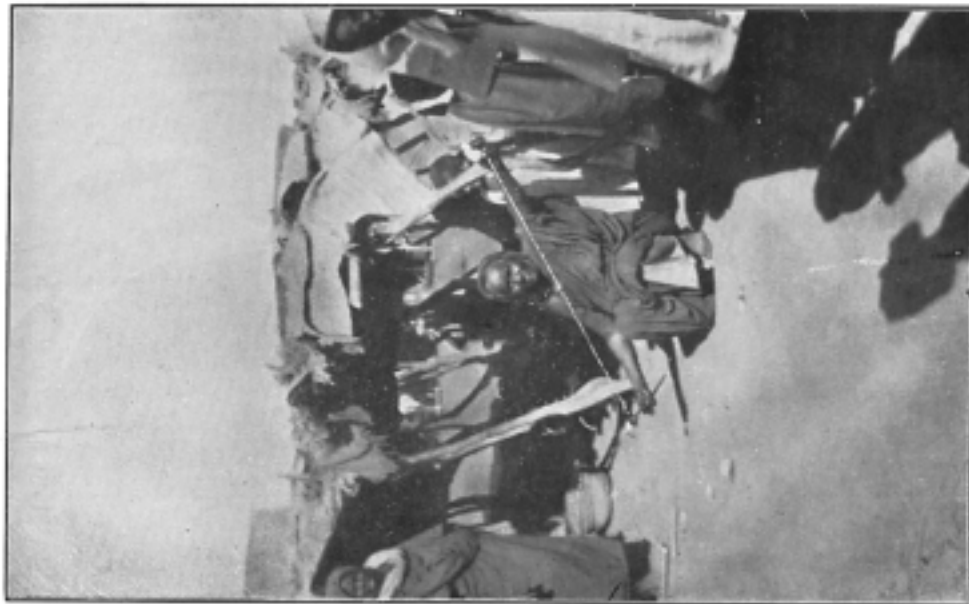


Plate 27.—DRAWING WFT THREAD WITH THE PALM *upwards*

TYPE 6 (D). COTTON SPINNING. EL KHANDAQ, DONGOLA PROV., SUDAN.



Plate 29.—DRAWING OUT FOR WARP THREAD WHILE THE SPINDLE REVOLVES.



Plate 30.—THE SECOND SPIN, EVENING THE WARP THREAD.

doubt the prepared rove which the spinners are re-spinning, or doubling, makes it more possible to keep two spindles in motion (*v. supra*, p. 23 and Figs. 7 and 8, and Plate 18); but even so, there remains a good deal to be explained, and I have never seen anything remotely resembling it with which to compare it. There is, however, an illustration in Klunzinger's *Upper Egypt*¹ of a fisherman at Kosseir using two spindles made of crossed sticks, and he is described as being occupied in doubling flax thread for net making, so I do not despair of coming across, some day, a similar practice in some out-of-the-way part of the world.

I have experimented myself with two spindles just sufficiently to realise where the difficulties lie. I think the procedure, as guessed at from a study of the scenes, is as follows:—


The spinner, having placed two balls of lightly spun thread in two "tension pots" and attached the ends of the threads to two spindles takes the threads in her left hand, as also one spindle (No. 1). The other spindle (No. 2), is held in her right hand. (Cf. position of spinners in Mehenkwetre model). Then spindle No. 2 is rotated by being rolled by the right hand on the thigh and is dropped to revolve in the air. As soon as it is dropped, spindle No. 1 is taken from the left hand by the freed right hand, rotated and dropped to spin. As spindle No. 1 is dropped spindle No. 2 is caught and the spun yarn rolled up (cf. position of boy in Figs. 7 and 8), more rove is drawn from the pot, spindle No. 2 again rotated and dropped, spindle No. 1 is then caught and treated in the same way and so on da capo. A strong roll on the thigh must be given so that each spindle revolves long enough to give time to deal with the other one. This is sufficiently exciting in itself but is nothing compared to the difficulty of preventing the threads from becoming entangled. Still, to follow out this process, even with little measure of success, does give a probable idea of how it may have been done long ago by the expert spinners of the day.

USE OF THE DISTAFF.—No distaff is to be seen in any of the Tomb scenes, and this seems unusual to us because in the spinning with which we are familiar, the Classical or European type, the distaff plays an important part. Schliemann for instance was so possessed by the idea that the Beni Hasan spinners must have had a distaff that he suggested that it might have been hidden in the vase or basket at their feet.² Really, the distaff does not appear to have been introduced before Roman days, from which time a few rare examples have survived like the specimens in the museums of Leyden and Brussels, made of split cane in a similar way to those figured by Sir Gardner Wilkinson from Thebes³. (See p. 37).

¹C. B. Klunzinger : *Upper Egypt*, 1878, p. 305.

²H. Schliemann : *Troja*, 1884, p. 296.

³Sir G. J. Wilkinson : *Manners and Customs of the Ancient Egyptians* (1842, 2nd ed.), Vol. 3, page 136, Fig. 355.

USE OF THE SPINDLE, WHORL UPPERMOST.—Herodotus might have added to those manners and customs of the Ancient Egyptians which exactly contradicted the common practice of mankind the fact that they dropped their spindles whorl uppermost instead of whorl downwards. This is clearly seen from all the Tomb scenes, is confirmed by the shape of those spindles which have actually been found with the whorl in position on the stick, and by the shape of the spindle in the hieroglyph *Khes*,  which shows the whorl at the top and the cone of yarn underneath it. To this day fellahin do the same, dropping their spindles whorl uppermost, and they call the spindle whorl "ras el maghzal" head of the spindle.

THE SPINDLE.

In the Ancient Egyptian spindles there is little of the "spindle" shape; they have a stem that is rather long and slender, tapering but very slightly, cut from wood or reed or palm rib. There is usually a hook or thread notch cut at the top of the stem, and the whorl is placed immediately below it.

There was some variation in the course of history and certain types of spindle and whorl are readily recognizable. The earliest prehistoric whorls, such as those from Nagadeh¹, are of limestone, small and rounded, unfortunately none have been found in position on the stick. In the pre-Dynastic Settlement site at El Mahasna were found "some small round objects (generally of pottery) pierced with a hole, hence probably spinning-whorls"² (See Plate 41, fig. 3). A heavy IVth Dynasty whorl of diorite is shown in Plate 41, fig. 4.

The typical spindle of the XIIth Dynasty³ had a cylindrical whorl and a deep spiral groove running round the stem above for a thread notch (cf. the IXth Dynasty example from Kahun in Plate 41, fig. 1), the spindles held by the spinning figures in the Beni Hasan and the Mehenkwtetre models seem exactly to be compared with actual specimens found. The spiral groove is indicated on the stem above the whorl of the spindle used by the girl in Plate 16 (and see p. 26). Though the cylindrical whorls were more abundant from Kahun, there were also found domed whorls of limestone and wood of the same period.

In the XVIIIth Dynasty both whorls and spindles were more varied in type. Two examples are shown in Plate 41, figs. 2 and 5. Some had very slender stems and domed whorls of wood, others

¹Petrie: *Prehistoric Egypt*, p. 41, Pl. XXVI.

²J. Garstang: *Mahasna and Bêt Khallâf*, 1903, p. 6 and Pl. V. One of these is in Bankfield Museum, by exchange with the Pitt Rivers Museum.

³Petrie: *Tools and Weapons*, p. 53, Pl. LXVI.

were more like a refined variety of the XIIth Dynasty spindle.¹ There exists one spindle from the XVIIIth Dynasty which must have been spun whorl downwards; it was found at Gurob,² with the whorl in position at the bottom of the stem and a thread notch at the top; but so far as I know, it is unique. Ptolemaic whorls (3rd century B.C.) of blue-green faience from the Faiyum desert are shown in Plate 42, these are flat discs as thick at the outer edge as at the centre. In the Roman period the spindles found are still quite definitely of a type to be spun whorl uppermost, the stem usually has a wooden whorl (see Plate 43), sometimes very neatly turned (cf. fig. 1, in Plate 43), with a metal hook set into it at the top. Some of them are rather heavy and look more like spindles for spinning wool than flax as may very well have been the case. Plate 44 shows typical varieties of Coptic and late Roman whorls; these are of various materials and usually decorated with carved patterns, in which the dot-and-circle appears very commonly.

ROTATION OF THE SPINDLE BY ROLLING IT ON THE THIGH.

The rolling of the spindle on the thigh is seen very clearly in the Tomb scenes, the raising of the right leg being most clearly shown in the Tomb of Daga, and almost as well in the Tomb of Baqt; the scanty clothing of the spinners also seems adapted to make it easy. Here again is a feature unusual to us, for in European spinning the spindle is rotated by twirling it between the finger and the thumb. Of course the fact that the Ancient Egyptian spinners rolled the spindle on the thigh does not preclude the possibility that they also knew how to twirl it with their fingers, but we have no evidence on that point. One thing may be noted, that rolling on the thigh gives a very strong twist, very suitable for re-spinning or doubling. And another, that this rotation goes with a spindle that is spun whorl uppermost, the long stem below the whorl giving just the right space for the hand to rest on while rolling.

CONCLUSION.

Now these last three features, differing so much from Classical and European practice, i.e., the absence of the distaff, the use of the spindle whorl uppermost, and the rotation of the spindle by rolling it on the thigh are of very special interest because they have survived to the present day. The very careful preparation of raw material for spinning has gone with the fine linen to whose excellence it contributed and the *legerdemain* feats with two spindles have vanished, but to this day, the wool spinners of Egypt and the cotton spinners of the Sudan use their spindles whorl uppermost,

¹*Peet and Woolley: Op. cit. Pt. I., Pl. XXII., p. 75.*

²*G. Brunton and R. Engelbach: Gurob, 1927, Pl. XIII., Fig. 8.*

they roll them on the thigh, and they prefer to spin without a distaff as do the flax spinners of Egypt.

B. FLAX SPINNING IN MODERN EGYPT.¹

It is a rare thing nowadays to find flax spinning on a hand-spindle in Egypt, though wool spinning is often enough seen. Flax is considerably grown, but much is exported and the remainder largely used for making twine or rope, a purpose for which the thread is sometimes spun on a primitive type of hand-spinning machine. But hand-spindle spinning is still also occasionally used for flax thread for making nets, and for other purposes, as described by Klunzinger long ago at Kosseir². More rarely, women may still be found spinning fine thread for the weaving of a piece of linen on one of the village looms. Such spinning can be seen at Kirdasseh near Giza, and at Nahya, a village just north of Kirdasseh; I did not see any flax spinning myself when visiting Kirdasseh, but I had a description from an eye witness. At Nahya, I had the good fortune to see it myself, in April, 1926.

FLAX SPINNING AT NAHYA.

Nahya is a picturesque place with beautiful old houses, with jutting balconies and fine inner courtyards. Rich fields lie round it, but the desert edge is not far away. I shall not easily forget my first sight of the green waves of flax, bright in front of a line of tall palms and, behind the palms, yellow sand and the pyramids of Giza sharp against the sky. It was a sight most beautiful in itself, and it also held promise of interest in the industry to be seen in the village, and the possibility, always in the mind as one watches village life in Egypt, of light to be thrown back on the past from the primitive present. The earlier processes of preparing the flax could not be seen at the time of my visit but they were described to me as follows:—

PREPARATION OF RAW MATERIAL.—When gathered, the flax is laid to soak in water, to soften and disunite the fibres, the “retting,” which takes about fifteen days, according to the temperature. Then it is raked, laid to dry, turned, and then dried again—this is equivalent to “grassing.”³ When dry it will keep for two years, indeed my informant told me that the

¹*Cf. Grace M. Crowfoot: "Hand Spinning in Modern Egypt," in Ancient Egypt. 1928 (Dec.), pp. 110-117 (with 18 figs).*

²*C. B. Klunzinger: Op. cit. p. 305. Fisherman making thread with Spindle. (Cf. p. 29 supra).*

³*My informant did not mention the ripple, a comb used for removing the bolls from freshly gathered flax stalks in the field, but I know it is in use elsewhere in Egypt. See also the Note in N. de G. Davies: Five Theban Tombs, 1913, p. 35; "rippling" in Ancient Egypt was always represented as a field occupation.*

TYPE 6 (D). CHILDREN SPINNING COTTON AT HILLET MAHMUD, FUNG PROVINCE, SUDAN.



Plate 31.—CHILD ROLLING SPINDLE ON THE THIGH.



Plate 32.—SPINDLE REVOLVING AFTER BEING ROLLED ON THE THIGH.

TYPE 6 (D). COTTON SPINNING. TIMULGIN, NEAR RASHAD, NUBA MTS., SUDAN.



Plate 34.—DRAWING THE THREAD WHILE THE SPINDLE REVOLVES



Plate 33.—MAN ROLLING THE SPINDLE ON THE THIGH

SPINDLES FROM MODERN EGYPT.

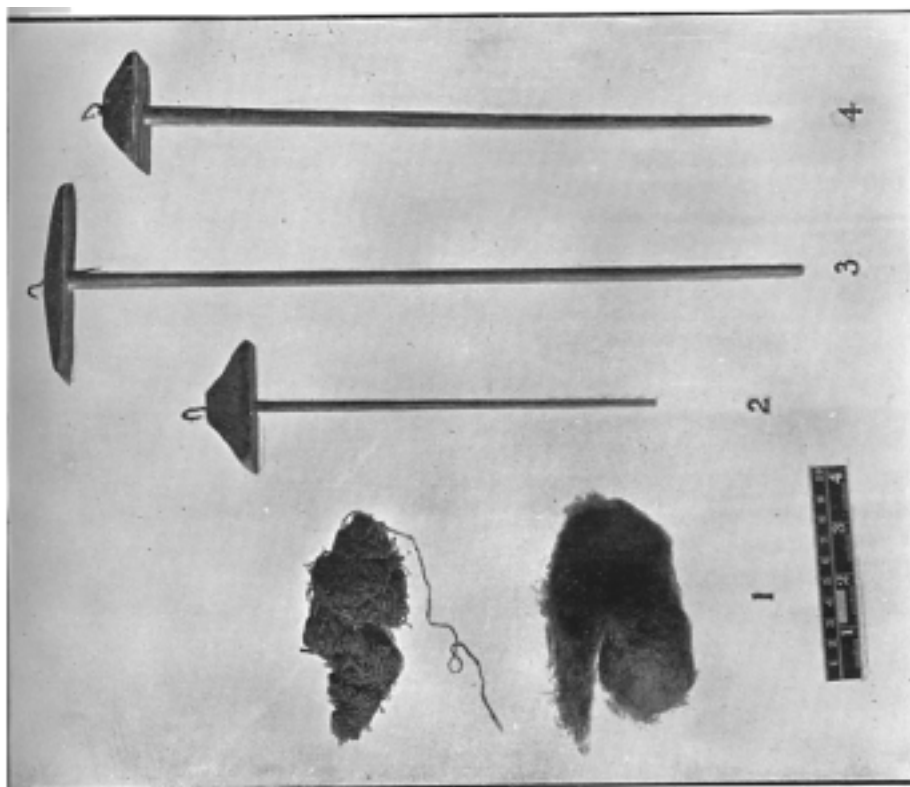
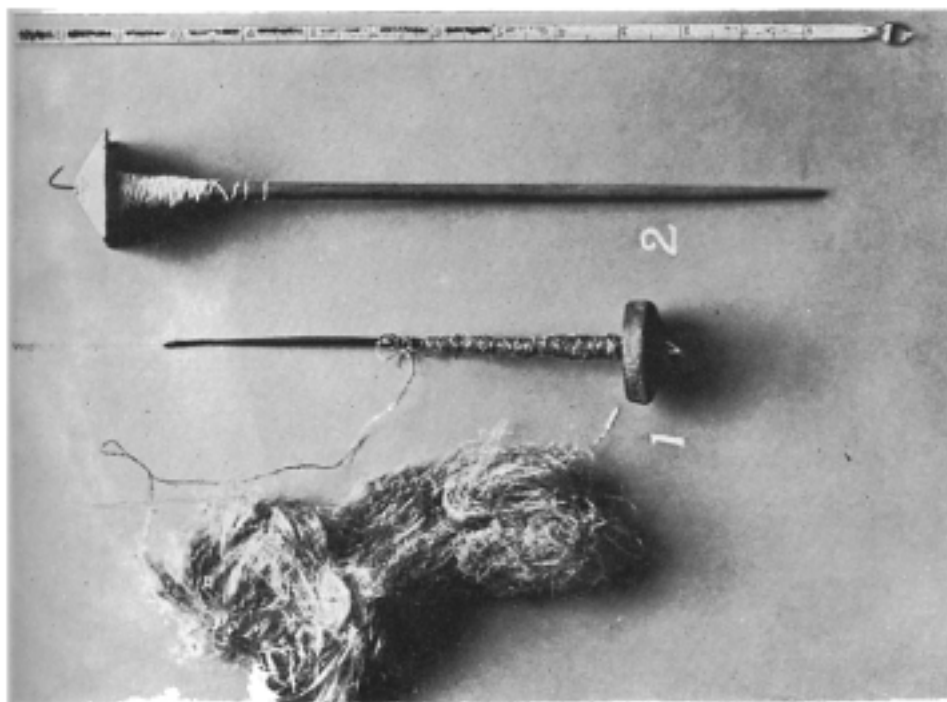


Plate 36.—1 AND 2, SPUN AND UNSPUN BLACK GOAT'S WOOL AND SPINDLE OBTAINED AT SHEIKH ABD EL QURNA, THEBES.
3 AND 4, SPINDLES FROM EL HAGG QANDIL, ASYUT PROV.
COLLECTED BY G. R. CARLINE, 1925-6. BANKFIELD MUSEUM



[Photo by Leynech, Beccles.]
Plate 35.—(1) FLAX SPINDLE FROM NAHYA.
(2) WOOL SPINDLE FROM DARAU.



[Photo by Leyneek, Beccles.

Plate 37.—SPINDLES AND DOUBLERS, SUDAN.

1. COTTON DOUBLER, BERTI, KORDOFAN.
2. COTTON SPINDLE, CLAY WHORL, FELLATA, MAIWURNO.
3. COTTON SPINDLE, WOODEN WHORL, BERTI, KORDOFAN.
4. WOOL SPINDLE, GOURD WHORL, ABABDE, MEROE.
5. HOOKED STICK FOR SPINNING WOOL, BENI AMER, KARORA HILLS.
6. WOOL DOUBLER, ABABDE, MEROE.

fibre would be better after keeping for a year or so than when freshly gathered.

The further processes of preparation were going on inside a large inner courtyard, and the friendly people told and showed me all they could in the time. When required for spinning, the flax must be "scutched," and the first part of scutching is the breaking or bruising of the flax. At Nahya this is done by beating it with a wooden mallet, *el durs* (Fig. 9), on a large stone (Plate 19); several stones were arranged against the side walls of the court for this purpose. After the breaking comes the scutching proper, the removal of the tow by scutching blades. This is shown in Plate 20; the worker simply beats the broken flax with a large wooden fan or bat, *el minfada* (Fig. 9), to shake out all the loose pieces. These two processes are always carried out by men, but the next, "hackling," is women's work, and two are seen at it in Plate 21. The flax is drawn through a comb, *el misht* (Fig. 9), the metal teeth of which are set upright in a metal plate on a wooden block. Now the flax is ready to spin.

METHODS OF SPINNING.—The spinning of Nahya is considered as something of a wonder or a joke by the people living around. When I discussed it beforehand, my informant laughed, and said, "I suppose you want to see the women who spin through the mouth!" This tale proved quite true, the women of Nahya do spin through their mouths—they let the growing thread run between the lips so as to keep the fibres even and moist. The flax is held in the left hand, close to the mouth (Plates 22 and 23), and the spindle is twirled, whorl downwards, by the thumb and first and second fingers of the right hand. The spindle is allowed to drop and spin, and is usually controlled by the fingers being closed round it, but without touching it; the spin is very short. I did not see any rolling of the spindle on the thigh. The women told me that they never doubled their yarn, and that it was destined to be woven into linen for their own use on the looms of Kirdasseh.

NO DISTAFF.—The women of Nahya used no distaff, the hackled flax was held in a soft roll in the left hand.

THE SPINDLE.—The flax spindles seen at Nahya had a wooden or metal stem with a slanting notch at the top of the stem, and a wooden whorl at the bottom. The specimen figured (Plate 35, fig. 1) has a metal stem.

FLAX SPINNING AT KIRDASSEH.

My informant on this subject was an Egyptian from Upper Egypt. He had observed the spinning when visiting Kirdasseh

with some interest, as it was the only time in his life that he had ever seen flax spun. The women, he told me, used spindles exactly similar to those used for wool (spindles with wooden whorls surmounted by a metal hook) only with a smaller whorl. They used no distaff, holding the flax in a bundle in the left hand. The spindle was twirled by the fingers and thumb of the right hand only, not by rolling on the thigh, and was spun whorl uppermost. My story of women spinning in the next village with their spindles whorl downwards, was received by him with incredulity. "Everybody," said he, "spins with the whorl above. Is it not called *ras el maghzal* (head of the spindle)? How then can it be below?"

The chief peculiarity of the craft at Nahya, i.e., the passing of the thread through the mouth while spinning had also been observed by him at Kirdasseh, and he confirmed my information that no doubling was used, and that the thread spun was for the weaving of linen on hand looms at Kirdasseh itself.

So far our study of the present at Nahya and Kirdasseh. Now how far can we compare the tools and methods used in the modern craft with those of Ancient Egypt?

COMPARISON WITH ANCIENT EGYPT.

TOOLS. THE MALLET, *el durs*. (Fig. 9, A., B.).

The mallet used at Nahya to break the flax was not like the oval flax bats seen in the Tomb scenes¹, of which examples are known², one being in the Ashmolean Museum at Oxford, but resembled exactly a class of mallet described by Petrie as "a primitive tool which has not yet been superseded"³. That used at Nahya had a heavy longish head with a cylindrical handle, cut in one block of wood, and during the flax-beating, the head gets worn to a waist. A similar wearing can be seen in many of the mallets of this kind that have come down to us, but of course they were, and are, used for many different purposes and not only for the beating of flax.

THE FAN, OR SCUTCHING BLADE, *el minfada*. (Fig. 9, C.)

The scutching blade is made of a thin flat piece of wood, with a handle made of a separate piece fastened on, an obviously late feature. There is a wooden implement from Egypt (with no history) very like it, at the British Museum, No. 5409, but cut out of one piece of wood.

THE COMB, *el misht*. (Fig. 9, D.).

The comb or hatchel with iron teeth, used for hackling, cannot be compared with anything from Ancient Egypt. Wooden combs

¹Newberry: *Beni Hasan, Pt. I. Pl. XI. Retting and Beating of Flax.*

²Petrie: *Tools and Weapons. Pl. XLIX. Fig. W. 240 (and page 54) and Peet and Woolley: Op. cit. Pt. I. Pl. XIX.*

³Petrie: *Tools and Weapons. Page 40. Pl. XLVI.*

have been found, some of which may have been used for hackling flax, others resemble more the class of short-tooth comb beater used to this day on vertical carpet looms. The use of a comb with iron teeth for hackling is mentioned by Pliny,¹ at the end of the First Century, A.D.

PREPARATION OF RAW MATERIAL.—The process of preparation by means of both these tools compares very closely with that given by Pliny. “The stalks themselves are immersed in water, warmed by the heat of the sun, and are kept down by weights placed upon them; for nothing is lighter than flax. The membrane, or rind, becoming loose is a sign of their being sufficiently macerated. They are then taken out, and repeatedly turned over in the sun, until perfectly dried; and afterwards beaten by mallets on stone slabs. That which is nearest the rind is called *stupa*, “tow,” inferior to the inner fibres, and fit only for the wicks of lamps. It is combed out with iron hooks, until all the rind is removed. The inner part is of a whiter and finer quality. Men are not ashamed to prepare it. . . .”²

NO DISTAFF.—No distaff is used in the flax spinning of Kirdasseh and Nahya, in this point the spinning resembles the spinning of Ancient Egypt, as shown in the Tomb scenes.

THE SPINDLE.—The spindles at Kirdasseh are spun after the Ancient Egyptian fashion, whorl uppermost, and in type resemble the spindles of Roman days.

The spindles of Nahya, on the other hand, cannot be compared with the Ancient Egyptian spindle, except the unique specimen from Gurob³ and they are spun whorl downwards after the European fashion.

METHOD.

Using the same method the spinners of Nahya drop the spindle whorl downwards, while those of Kirdasseh drop it whorl uppermost. Both twirl the spindle with the finger and thumb, the roll on the thigh not being practised. The chief peculiarity noted at both Kirdasseh and Nahya was the “spinning through the mouth.” There are references to such a practice in the Classics, to even or to moisten the thread⁴, and it is shown very clearly by the figure of a spinner on a vase from Orvieto⁵. Catullus ascribes it to those

¹See next reference and its quotation above.

²Pliny: *Nat. Hist.*, xix. 3; translation quoted in Sir Gardiner Wilkinson: *op. cit.* (Ed. 1, 1837), Vol. III., p. 139.

³*V. supra*, p. 31.

⁴Seneca: *Hercules Oetaeus*, 373.

⁵Daremberg et Saglio: *Dictionnaire des Antiquités Grecques et Romanes*. Fig. 3382, p. 1426.

august spinners the Fates themselves,¹ "their hands duly plied the eternal task. The left hand held the distaff clothed with soft wool, then the right hand lightly drawing out the threads with upturned fingers shaped them, then with downward thumb twirled the spindle poised with rounded whorl; and so with their teeth they still plucked the threads and made the work even. Bitten ends of wool clung to their dry lips, which had before stood out from the smooth yarn." I know of nothing illustrative of any similar practice in Ancient Egypt, unless one could compare with it the action of the woman in the Tomb of Tehuti-Hetep who puts a thread into her mouth, but she is engaged in the more primitive preparation of a fine flax rove by hand.

CONCLUSION.

In this Modern Egyptian flax spinning there is no preparation of the flax by hand, or use of a long fine rove, but in the absence of a distaff it resembles Ancient Egyptian methods. At Kirdasseh the spindles are spun whorl uppermost, another and more important point of resemblance, but rotation on the thigh is not practised. It is possible in this case to make too much of this last point, because fellahin wool spinners who do use rotation on the thigh where a close thread is desired, or when doubling, omit it when aiming at a lightly spun thread, and Kirdasseh spinners perhaps do not use it for the same reason.

But the Nahya spinning seems even further away from the Ancient Egyptian spinning than that of Kirdasseh. The spindles there are used whorl downwards with a finger and thumb twirl quite after the European fashion, and the passing of the thread through the mouth (as at Kirdasseh) seems even to suggest a link with Rome.

Therefore, this flax spinning, in part recalls the craft of Ancient Egypt, but in parts that of Europe.

C. WOOL SPINNING IN MODERN EGYPT.

Now if we turn from these examples of flax spinning to the wool spinning of the fellahin, very different inferences will be drawn, for the resemblance to Ancient Egyptian practice is very close indeed. Both men and women spin all through the country as in olden days, though probably, women were then, as now, more apt for the craft.

PREPARATION OF THE WOOL.

As far as my own observations go, wool used in spinning by the fellahin does not receive much preparation, usually only a little teasing by hand. Cards are sometimes used in Giza Province, and

¹*Catullus. LXIV. (Lines 310— of Latin text). Tr. by Cornish. (Loeb Library, p. 119.)*

are sold in Cairo in the bazaars, but I have no knowledge of their use in Upper Egypt. A spinner from Darau (Upper Egypt), whose acquaintance I made in Omdurman, told me that the spinners of her native place prepared their wool with great care, by hand. She herself washed her wool in river water, spread it out to dry on clean sand, and then teased it out by hand. She despised almost equally those who spun in the grease, whose wool was "dirty," and those who washed wool with soap and carded it, whose wool was "dry," regarding her own way as the "happy mean." Of course she had never heard of the Scotch spinners refinement of returning the lost grease to washed wool in the form of butter, until I mentioned it, but she was too shocked by such extravagance to regard it seriously.

When the distaff is used, which is but rarely, some special preparation of the wool may be made. The spinner, sitting, teases the wool on her knees, forming it into a thick long rove, giving it a twist here and there, just enough to keep it together, and at last winds it on the distaff. This sounds rather like the preparation of the rove as discussed from the Tomb scenes, but with materials so different as flax and wool it is not possible to draw an exact comparison. We imagine the fine flax rove of the Ancient Egyptian spinners which could be drawn from balls and spun on two spindles as a partly spun thread needing little or no attenuation, only a re-spinning, while the thick wool rove of the modern spinners needs much attenuation before becoming yarn.

USE OF THE DISTAFF.

The distaff used at the present day in Egypt is sometimes only a plain stick, sometimes a split cane or reed, or cane bound into the form of a loop. (Plates 39 and 40). Both these two latter forms are interesting for they certainly date back to the Roman period if not earlier. Gardner Wilkinson¹ figures them with spindles as "Spindles of the 18th Dynasty," but it is, I believe, now generally taken that they belong to a later period. But though the distaff has been known for so long it is not very often used. The chief occasions for its employment are when a woman determines to spin for a long time without stopping, or when she sets out for some distant village and wishes to spin while walking there. She then prepares a suitable quantity of wool and puts it on the distaff. The interesting thing is that knowing the distaff, the women prefer to spin without it except for these special purposes, and their usual practice is simply to hold the teased wool in a soft roll in the left hand.

METHOD.

The spindle is spun whorl uppermost. The usual procedure is for the spinner to hold some prepared wool in her left hand and twirl the spindle with her right hand. The spindle is dropped and twirls

¹Wilkinson: *Op. cit.* Vol 3, p. 136, Fig. 355, (1, 4).

in the air until the spinner judges that there is sufficient twist on the thread, when she will wind the thread up on the spindle (Plates 24 and 25). Attenuation is usually carried out between both hands while the spindle is twirling, occasionally, with a difficult piece of wool the spinner may just stop the spindle against her dress, or the floor. For soft spun yarn the twirling by hand is sufficient, but if the spinner wishes to put a hard twist on her yarn she will rotate the spindle by rolling it on her right thigh. When doubling thread, so far as I know, the roll on the thigh is always used. Doubled thread is used for coarse coverings (*ghata*), blankets, etc., single thread being preferred for the *zabot*, a brown woollen material for *galabiehs*, much esteemed in Upper Egypt. Of all places in Egypt, Abu Qulqas has the greatest reputation for wool spinning; I regret that I never had the opportunity to visit it.

Spindles (with wooden whorls of pyramid-shape) from Darau, Thebes and El Hagg Qandil are shown in Plates 35 and 36.

The best work I ever saw myself was that of my friend from Darau, her spinning was beautiful to watch, the yarn fine and very even, and she used to delight me by making it up into enormous balls, about 9 inches in diameter, resembling the rather smaller ball of flax yarn from Ancient Egypt in the Ashmolean Museum.

CONCLUSION.

The wool spinning of the modern fellahin resembles the flax spinning of Ancient Egypt more closely than does the flax spinning of Modern Egypt, described in the last section.

They have no preparation of a rove that is comparable with that of the Tomb scenes, nor is it to be expected with so different a raw material. But their preference for spinning without a distaff, the dropping of the spindle whorl uppermost, and the frequent use of rotation on the thigh all point to the direct descent of their craft from that of their ancestors.

D. COTTON SPINNING IN THE SUDAN.

The spinning and weaving of cotton in the Sudan is an ancient industry—how old it is, is impossible to say, but cotton fabrics were discovered by Dr. Reisner at Ancient Meroe dating from about the 2nd or 3rd century A.D. Though these fabrics were carbonized and difficult to handle, the fibres could still be studied under the microscope and appeared, according to the opinion of Mr. R. Massey, Sudan Government Botanist, to have the characteristics of a cotton grown under very dry climatic conditions such as obtain in the Sudan. This goes far to prove that these fabrics were spun and woven in the country, and to this can be added the discovery also at Meroe by Dr. Garstang of many spindle whorls in tombs of a rather later date¹. Study of a textile cannot give much information

¹On the date of these tombs see "Christian Nubia" by J. W. Crowfoot, in *Journal of Egyptian Archaeology*, Vol. XIII., p. 150.

about the exact way in which the thread was spun, but the fineness and regularity of the thread in a beautiful shawl border among Dr. Reisner's finds point to an advanced method of spinning, such as Suspended Spindle. There is no improbability in assuming that the people of Meroe spun after this fashion, when one considers that it was practised long before them by the Egyptians and is still used to-day by the modern Sudanese. The people themselves say that in olden days, before the introduction of better cotton they spun the wild tree cotton of Sennar; it is still occasionally picked and used as I observed myself at Hillet Mahmud near Sennar, but nowadays the hand spinners of the Sudan are great connoisseurs of cotton and will be content with nothing less than the best for their warp thread. In the northern Sudan spinners are usually women, old men occasionally spin but are rather ashamed of it—one may say that the further south one goes the more natural it becomes to see men spinning.

THE SPINDLE.

The cotton spindle of the Sudan, examples of which are shown on Plates 37 and 38, usually have stems of fine cane with a decorative little hook, known as *el dign*, "the beard," at the top. Occasionally the stem is of wood, as in fig. 3, Plate 37; in this case the top has a most ingenious little thread notch. The whorl is always placed at the top of the spindle immediately under the hook; if it does not stay where it is desired, a wisp of cotton is forced up round the stem to keep it steady. Whorls are made of various materials, pottery (baked), a mixture of clay and gum (unbaked), wood, leather, or bits of gourd. They are rather light—the common gourd whorl of Omdurman usually weighs no more than 4 or 5 grammes. Attempts at decorating the whorl are not very common, but sometimes one sees a few lines of pattern cut on the gourd whorls, and the clay whorls often have a frilled edge such as that seen in fig. 4, Plate 38, and shown also on one of the whorls found at Ancient Meroe¹.

PREPARATION OF THE COTTON.

Sudanese spinners prefer to spin from cotton pulled straight from the seed. There is a bamboo hand gin in the country but it is not highly thought of, it is used to save time when quantity and not quality is the consideration. Occasionally a bow used for beating up cotton for stuffing cushions is used to prepare cotton for spinning but I have heard this practice alluded to by good spinners with withering contempt, and remarks such as these "They messed their cotton up and then tried to get it right by

¹J. Garstang: *Meroe*, 1911, p. 47.

beating it with a bow." "Children should be taught to pull their cotton right the first time, and not allowed to use the bow."¹

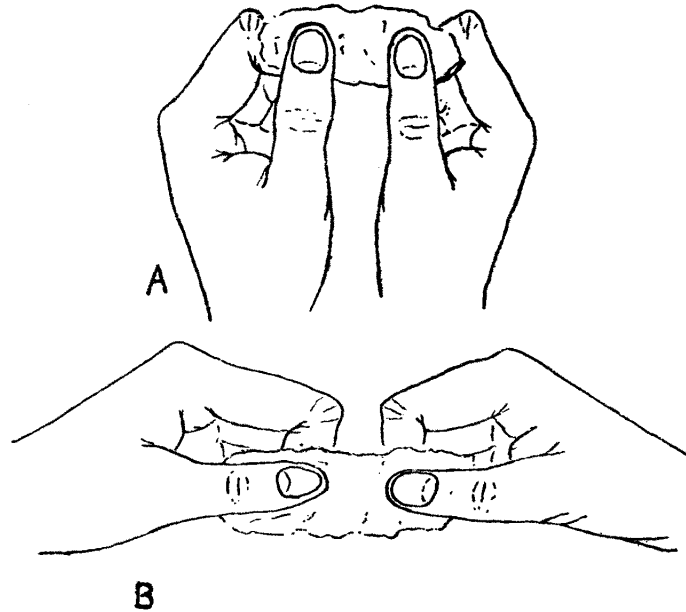


Fig. 10.—TEASING COTTON FOR SPINNING WARP THREAD. SHOWING: (A) FIRST POSITION, and (B) SECOND POSITION OF THUMBS.

DE-SEEDING AND TEASING COTTON.

The 'right' way to de-seed the cotton is to pull it out all round the seeds rather like rough and ready versions of exhibition seeds, until the seeds stand clear and drop out. The women say "You should pull the cotton from the seeds and not the seeds from the cotton." If then the cotton is pulled right, in light fluffs with the fibres in their original lie, weft thread can be spun from it right away.

¹[It is interesting here to compare the preparation of cotton amongst the Wapisiana, Central Arawaks, South America, and the very similar method of spinning with the roll on the thigh, but with the whorl 'downwards'. "The seeds of a (cotton) pod are removed by hand and the cotton spread in a round flat mass, through which a sharp stick is thrust, like the method used for filing bills. When a sufficient quantity has been seeded these little pods are pulled into long loose bands. A band is then wound round the left wrist, one end being fastened to the hook of a small spindle, which is made to revolve very rapidly by rolling it with the right hand downwards along the right thigh. The left hand is raised so that the suspended spindle revolves freely, while the right hand regulates the thickness of the thread. The finished thread is wound around the spindle above the whorl (which is downwards) until it is full, when it is made into a ball." (W. C. Farabee: *The Central Arawaks*. University of Pennsylvania. *The University Museum Anthropological Publications*, Vol. 9, 1918, p. 28 and plate 6). Farabee also states that cotton-spinning and weaving is done by the women, and that the Wapisiana learnt it from the Macusi, who learnt it from the Arecuna.—G.R.C.]

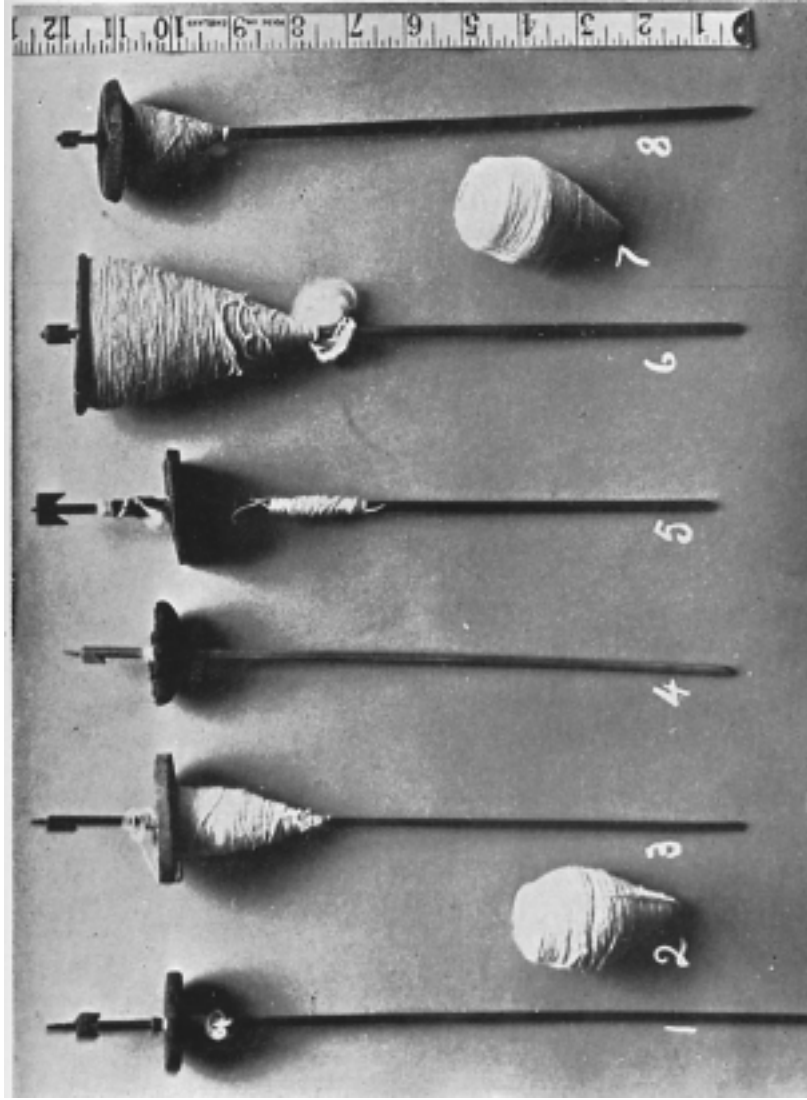
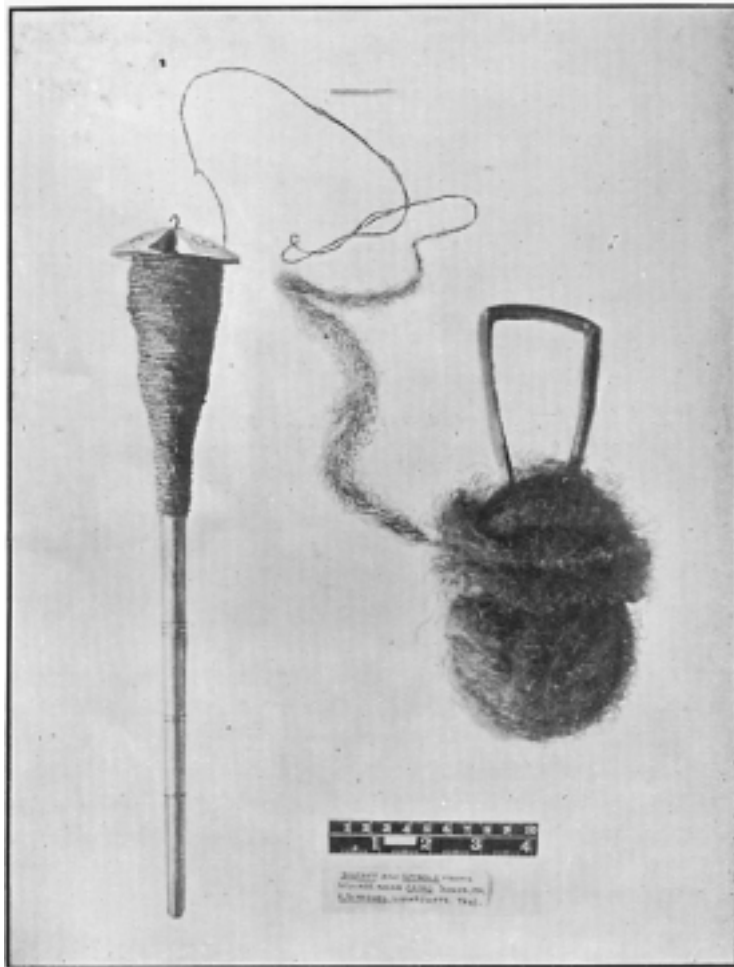


Photo by Leyneel, Beccles.

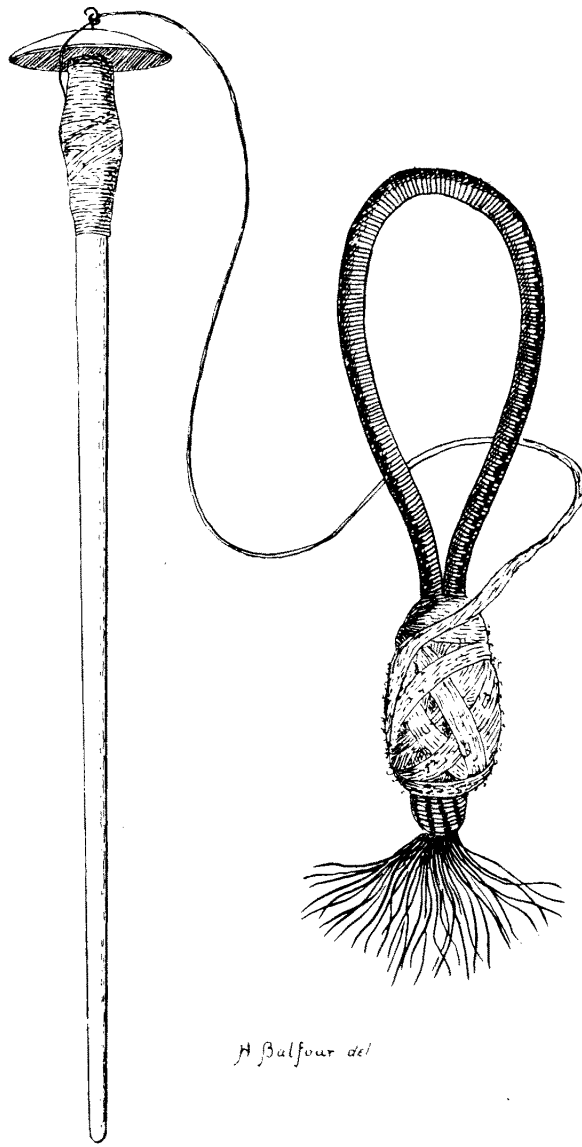
Plate 38.—COTTON SPINDLES, SUDAN.

1. HILLET MAHMUD, FUNG PROV., WHORL OF POTSHERD.
2. EL KHANDAQ, DONGOLA PROV., WHORL OF GOURD.
3. OMDURMAN, WHORL OF GUM AND CLAY (UNBAKED).
4. GEDIR, NUBA MTS., WHORL OF LEATHER.
5. RASHAD, NUBA MTS., WHORL OF GOURD.
6. HILLET MAHMUD, FUNG PROV., WHORL OF GOURD.
7. CONE OF WEFT THREAD.
8. CONE OF WARP THREAD.



[Photo by E. Roberts, Halifax.

Plate 39.—EGYPTIAN LOOPED DISTAFF AND SPINDLE,
FROM A VILLAGE NEAR CAIRO.
GIVEN TO BANKFIELD MUSEUM BY E. D. NICHOL, OF LIGHTCLIFFE.

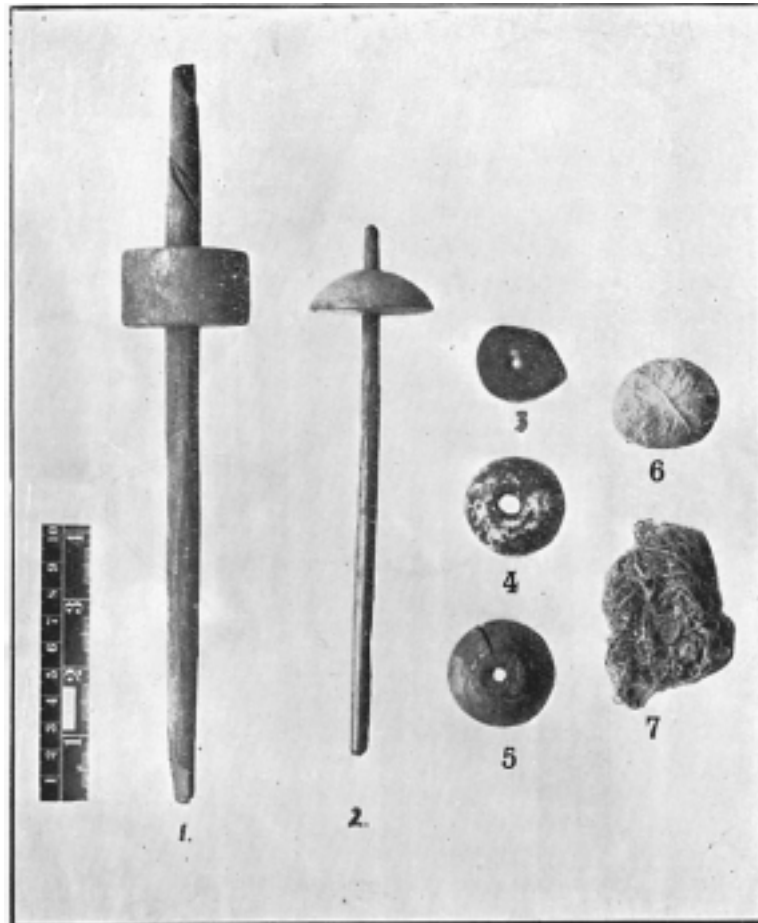


H. Balfour del

Scale about $\frac{1}{2}$.

Drawn by H. Balfour, Esq., Copyright.

**Plate 40.—SPINDLE AND DISTAFF. SARAGNA, ASYUT PROV.
COLLECTED BY MISS BLACKMAN IN 1914.
PITT RIVERS MUSEUM, OXFORD.**



[Photo by E. Roberts, Halifax.]

Plate 41.—ANCIENT EGYPTIAN SPINDLES, WHORLS AND THREAD
IN BANKFIELD MUSEUM.

1. (Tx. 19). KAHUN, IX. DYN.
2. (Tx. 18). KAHUN, XVIII. DYN.
3. (1927.299). PRE-DYNASTIC SETTLEMENT EL MAHASNA.
4. WHORL OF DIORITE, FAIYUM, IV. DYN.
5. (E.G.268) WOODEN WHORL FOUND WITH XVIII. DYNASTY ARTICLES
AT DEIR-EL-BAHRI. GIVEN BY EGYPT EXPLORATION FUND, 1904)
- 6 & 7. (Tx. 44, 45). TWO BALLS OF THREAD FROM GUROB, XVIII. DYN.

(SEE LIST OF PLATES FOR DETAILS.)

For good warp thread further preparation is necessary, and many good spinners, especially those in Dongola Province, tease it after this fashion. They hold the cotton between the thumb and forefingers of both hands as shown in Fig. 10 (A), and pull it out three or four times until the fibres lie flat on each other in a little bundle. Then they turn the thumbs, and holding the cotton as in Fig. 10 (B), they give it little jerky pulls until it is thinned out into a long wavy shred; it is then ready to be spun into the finest warp thread.

METHOD OF SPINNING.

Whether for warp or weft thread the first thing is to join the cotton to the spindle. If there is a bit of thread wound on it a common practice is to spin on to the end of the old thread, if not the spindle hook is caught into the fluff of cotton, a length is spun by twirling the spindle with the fingers, and then this length is taken off the hook and wound round the spindle under the whorl. Spinning proper now begins, and we will suppose that weft thread is to be spun.

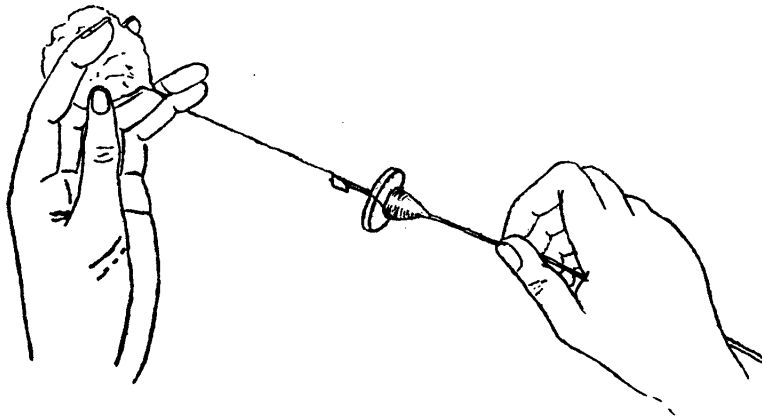


Fig. 11.—DRAWING WEFT THREAD; USUAL POSITION OF SPINDLE (WITH PALM DOWNWARDS).

WEFT THREAD.—The spinner holds the cotton in the left hand between the first and second finger while the thumb, third and fourth fingers control the thread. With the spindle held in her right hand she catches the thread round the hook, and twirls the spindle in her hand. The position of the spindle is usually as shown in Fig. 11, but it may be held either palm down as in Plate 26, or palm up as in Plate 27. This rotation in the hand sounds like our Type 4, but is really very different, as the movement is intermittent and imparted by repeated little twirls in which the fingers

play a large part.¹ While this twirling goes on so also does the drawing, the spinner separating her arms until a length is spun with just enough twist on it to bear the spindle weight. Then she applies the check, catching the thread between the third and fourth fingers (See Fig. 11), rolls the spindle on her thigh, drops it, and while it spins, she touches out lumps if there are any on the thread, and so makes it more even as shown in Plate 28. When the thread is twisted enough she catches the spindle again and winds on the spun cotton below the whorl. This should be done tightly, with little jerks of the spindle held in an upright position. Then the spindle is turned again to the slanting position of Fig. 11, and spinning re-commences. The yarn wound on to the spindle at last forms a little cone which is pulled off and tied up over the top as shown in Plate 38 (Figs. 2 and 7), such cones can be seen for sale in every market in the country. A good deal of skill is necessary to spin the best weft thread according to Sudanese ideas, for it should be thick and very smooth and very lightly spun, but the spinning of warp thread requires more art still.

WARP THREAD.—There is a Sudanese saying “El lahm bi wahid, el sedda bi etnen ”—“once for the weft and twice for the warp,” which the following explanation will make clear. The spinner twirls in the hand and draws out a length as for weft, only shorter and more lightly spun, then rolls the spindle on the thigh and lets it drop. While the spindle is whirling she takes the thread in her right hand and draws the thread out finely between her hands, as shown in Plate 29. Then she rolls the spindle once more, lets it drop and spin, evens the thread out as for weft (Plate 30), and when the twist is sufficient, catches it again and winds on the spun thread. Beginners in this method are apt to fall between two stools—either they draw a thread with insufficient twist on it and it breaks and down falls the spindle, or they make for safety and a strong thread, and then it won't draw out at all—they are well advised not to aspire to a long draw until they become expert. Children in the Sudan (Plates 31 and 32), who learn from the age of about 5 or 6, always spin weft thread at first—and some never get beyond it. It was often said to me, in extenuation of my difficulty in learning the method, “you should have learnt from six years old.”

The long draw, whether for weft or warp, is most beautiful to watch, the gesture is so gracious as the spinner spreads her arms while the spindle rotates gently in her hand and the ethereal shred of cotton lengthens until her arms are outstretched to their widest extent, and the twist runs the length of the thread. Then comes the swift roll on the thigh, the whirl of the spindle in the air and

¹*I remember that once when Sitt Zeinab, the camel girth weaver, was spinning wool, some cotton spinners tried to imitate her method of rotation in the hand and found it almost impossible. She, on the other hand, used to boast of being able to spin both ways, though she could not spin cotton as fast as some of the experts present.*

the neat wind up to finish the spin. The yarn produced by this method has many excellences, it is very soft and durable, having been spun from cotton straight from the boll and with the fibres as nearly as possible in their original order, and it weaves into a material most pleasant to the eye. As mentioned above (page 39), the further south one goes the more natural it becomes to see men spinning; Plate 33 shows a man at Timulgin near Rashad, in the Nuba Mountains, spinning cotton, rolling the spindle on his thigh, and in Plate 34 drawing the thread while the spindle still revolves.

In quality it varies from the extremely fine warp thread spun only by experts to the very coarse thick lumpy weft thread which is often all that can be seen in the *suk* or market, the best warp and weft thread being kept for home use or sold only to order. The weft thread is sold in the cones in which it came off the spindle (see Plate 38, fig. 2), warp thread is rarely sold in the cone, it is more often warped by the spinners themselves on wall pegs, one thread at a time from the spindle and sold as a warp.

DOUBLING.—Doubling cotton yarn is rarely done, except when a very strong warp thread is needed, or for thread for the continuous heddle leashes used on the local pit-treadle looms. A *mubram*, or doubling spindle is shown on Plate 37, fig. 1, it was seen in use in Kordofan, rolled on the thigh, after the same fashion as the doubling of wool already described under Type 5.

CONCLUSION.

Taking into consideration the great difference between flax and cotton, and the entire absence of any preparation of a rove, the method of spinning cotton in the Sudan yet shows strong points of resemblance to the flax spinning of Ancient Egypt, stronger even than those shown by the wool spinning of the Egyptian fellahin. No distaff is used, the cotton being held in the left hand, the spindle is invariably spun whorl uppermost, and the rolling on the thigh constantly used both for weft and warp thread. It is good to write that the hand spinning of the Sudan is still honoured and admired by the women of the country themselves and recognised as a handicraft by the Government Girls' schools. May it long remain, not only for the sake of the historical interest of its ancient past, but for present use and beauty.

SUMMARY.

1. HAND SPINNING.

DISTINCTIVE CHARACTERISTICS.

- A. Simplest method of spinning : done entirely by hand.
- B. Hand and thigh spinning.

ADVANTAGES IN PRODUCTION.

The comparison here is of B. to A. A is especially slow in manipulation, the three processes of attenuating, twisting and winding are done separately. In B, drawing and twisting are simultaneous.

ADVANTAGES IN PRODUCT.

With B a more uniform yarn is produced from steady base on which to twist.

- Sudan. A. Not known. B. Nuer.
- Other lands. A. Peasants of Sicily. B. Koryak of Siberia¹; Tlingit of Alaska²; Maori (New Zealand.) in past days³.

II. SPINNING BY TWISTING A HOOKED STICK.

DISTINCTIVE CHARACTERISTICS.

Spinning implement ; a small stick with a natural hook twisted by right hand, left hand drafts.

ADVANTAGES IN PRODUCTION.

Slight gain over hand spinning in speed of product ; no gain ; yarn coarse.

- Sudan. Beni Amer (Red Sea Pr.).
- Other lands. A similar method of spinning with a simple hooked stick "spinnhaken" is known in out-of-the-way parts of Sweden⁴.

III. GRASPED SPINDLE SPINNING.

DISTINCTIVE CHARACTERISTICS.

Spinning implement : a large spindle with a whorl grasped in two hands.

ADVANTAGES IN PRODUCTION.

Probably has a slight gain over both previous methods in speed ; attenuation and twisting separate.

¹ Kissell : *Op. cit.*, p. 18.

²A. Krause : *Die Tlinkit-Indianer*, Jena, 1885, p. 199.

³T. H. Smith : "On Maori Implements and Weapons." *Trans. New Zealand Inst.*, 1893, Vol. XXVI., p. 431.

E. Best : "The Art of Whare Pora." *Ibid.*, 1898, Vol. XXXI., p. 635.

⁴Oscar Montelius : *Kulturgeschichte Schwedens*. Leipzig, 1906.

ADVANTAGES IN PRODUCT. Coarse, no gain.

- | | |
|--------------|--|
| Sudan. | None. |
| Other lands. | Ancient Egypt (Probably for making twine).
Salish Indians (N. America) ¹ ; Spain. ² |

IV. ROTATION OF SPINDLE IN THE HAND.**DISTINCTIVE CHARACTERISTICS.**

Spinning implement : a simple stick, or a stick with a whorl at the top, spun by rotation in the right hand, left hand controls the wool.

ADVANTAGES IN PRODUCTION.

Greater speed than any of previous methods. Attenuation and twisting simultaneous.

ADVANTAGES IN PRODUCT:

- | | |
|--------------|--|
| | Very fine yarn can be produced from short staple wool. |
| Sudan. | A. Without whorl. Hadendowa, Kababish, Hamar. |
| | B. With whorl. Ababde and other tribes. |
| Egypt. | B. Bedouins of the borders. Bedouin Industry (Burg el Arab). |
| Other lands. | Arabs of Transjordania. |

V. (A). SUPPORTED HAND SPINDLE. (WOOL).**DISTINCTIVE CHARACTERISTICS.**

Spinning implement : a spindle resting lengthwise on the right thigh. The right hand rolls the spindle on thigh ; left hand drafts.

ADVANTAGES IN PRODUCTION.

It has none over Type IV in method because the processes of attenuation and twisting are separate, or in product, but has a wider use, being adaptable for more varieties of raw material, and leads naturally on to Suspended Spindle (Type VI).

- | | |
|--------------|--|
| Sudan. | Bulinarti Island, near Argo (Dongola). |
| Other lands. | Arabs of Transjordania (associated with Type VI); Navajo, Kwakiutl, and Pima (N. America) ³ . |

V. (B). SUPPORTED HAND SPINDLE. (COTTON).**DISTINCTIVE CHARACTERISTICS.**

Spinning implement : a small spindle standing erect on the ground, in a shell, or in a cup or bowl.

¹Kissell : "A New Type of Spinning in North America." *American Anthropologist*. Vol. 18, No. 2. April-June, 1916.

²Recorded by Mrs. Robert Aitken, see p 14.

³Kissell. *Yarn and Cloth Making*. 1918, p. 25.

ADVANTAGES IN PRODUCTION.	Greater speed.
„ PRODUCT.	A fine even yarn from simultaneous drawing and twisting.
Sudan.	Fellata (Blue Nile Pr.).
Other lands.	Ashanti (W. Africa); Ceylon, Assam, Dacca (India); Ancient and Modern Mexico.

VI. SUSPENDED HAND SPINDLE.

DISTINCTIVE CHARACTERISTICS.

Spinning implement: a spindle freely suspended from the thread it is spinning. A distaff frequently present. The spindle is rotated either by twirling between finger and thumb or by rolling on the thigh, and let swing.

ADVANTAGES IN PRODUCTION.

Greater length of spin. Increased momentum of free spindle.

ADVANTAGES IN PRODUCT.

Yarn of great evenness, strength and delicacy. Evenly attenuated yarn from double drafting by the hands and spindle weight.

Egypt.	Whorl downwards. Flax spinners at Nahya (Giza Pr.).
	Whorl uppermost. Fellahin spinners of wool. Ancient Egypt (XII. Dyn.), Roman Period.
Sudan.	Whorl uppermost. Cotton spinners throughout the country.
Other lands.	Whorl downwards. Northern Europe; Hungary; Greece.
	Whorl uppermost. Sicily; Spain.

APPENDIX A.—NATIVE WORDS USED IN SPINNING.

	Beni Amer, Karora Hills, Red Sea Coast (p. 10).	Hadendowa Sinkat, Red Sea Province (p. 10).	Sudan	Egypt (Modern)
The woman spins	la sid teril			
She spins ...		tiket		
Spin ...			ghazal ; tarr	ghazal
Spindle ...	agal	um adal	mughzal, mutrar	mughzal ; maghzal
Whorl ...			dirra	ras el maghzal
Hook ...			diqn (i.e. beard)	sennara
Tease ...			nafash	nafash
The woman teases ...	la sid tefaish			
Warp ...	wagrat ; ugra	teshilma	sedda	sedda
Weft ...	fil ; fal	alama	lahm	lahm

APPENDIX B.—WORDS USED IN THE TOMB SCENES.

	Tomb of Baqt. (Beni Hasan)	Tomb of Khety (Beni Hasan)	Tomb of Chnemhotep	Tomb of Daga (Thebes).
Above woman with instrument and flax in her hand ...	ʿ ^ʿ ssn	ʿ ^ʿ ssn		
„ woman apparently teasing fibres ...				ʿ ^ʿ ssn
„ women (and woman), preparing thread ...	msn	msn	msn	
„ boy with two spindles ...	dqr	dqr		
„ women (and woman), with two spindles ...	s't	s't		
„ spinner with two spindles ...			s't	
„ group with grasped spindle ...		hst nwt		

The following is a suggestion of the possible meaning of these words :—

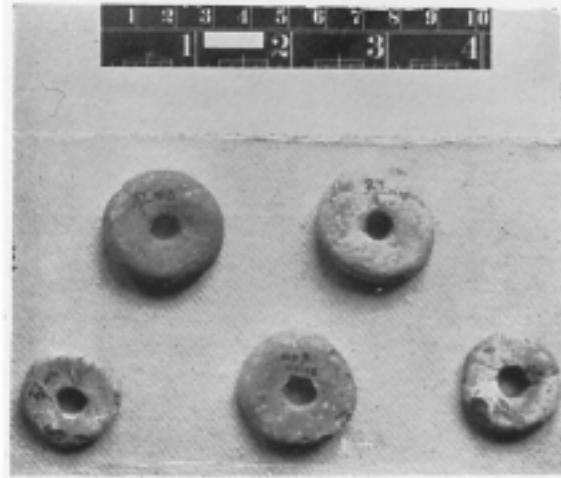
ʿ^ʿ ssn. A teasing out of the fibres, equivalent to hackling or combing.

Msn. Hand Spinning.

Dqr. Re-spinning on spindle.

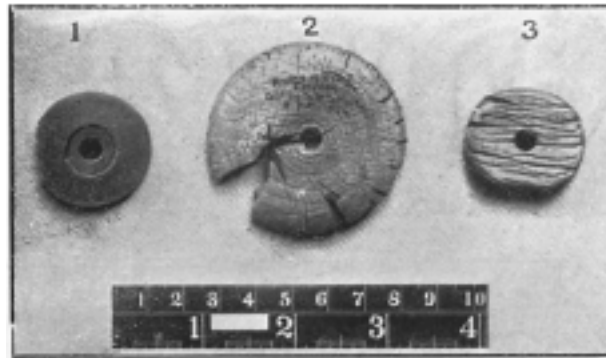
S't. Re-spinning, or doubling on spindle.

Hst nwt. Doubling (Cording) thread.



[Photo by E. Roberts, Halifax.]

Plate 42.— BLUEGLAZE WHORLS FROM PTOLEMAIC HOUSES, N. OF BIRKET QARUM, FAIYUM, DATE PTOLEMY PHILADELPHUS (B.C. 285-247). COLLECTED BY MISS CATON-THOMPSON. GIVEN TO BANKFIELD MUSEUM BY THE ROYAL ANTHROPOLOGICAL INSTITUTE.



[Photo by E. Roberts, Halifax.]

Plate 43.

THREE WHORLS OF WOOD OF PTOLEMAIC PERIOD :

1. KOM AUSHIM. 2 & 3. MEDINET DIMAI, FAIYUM,
COLLECTED BY G. R. CARLINE, 1925-6. BANKFIELD MUSEUM.

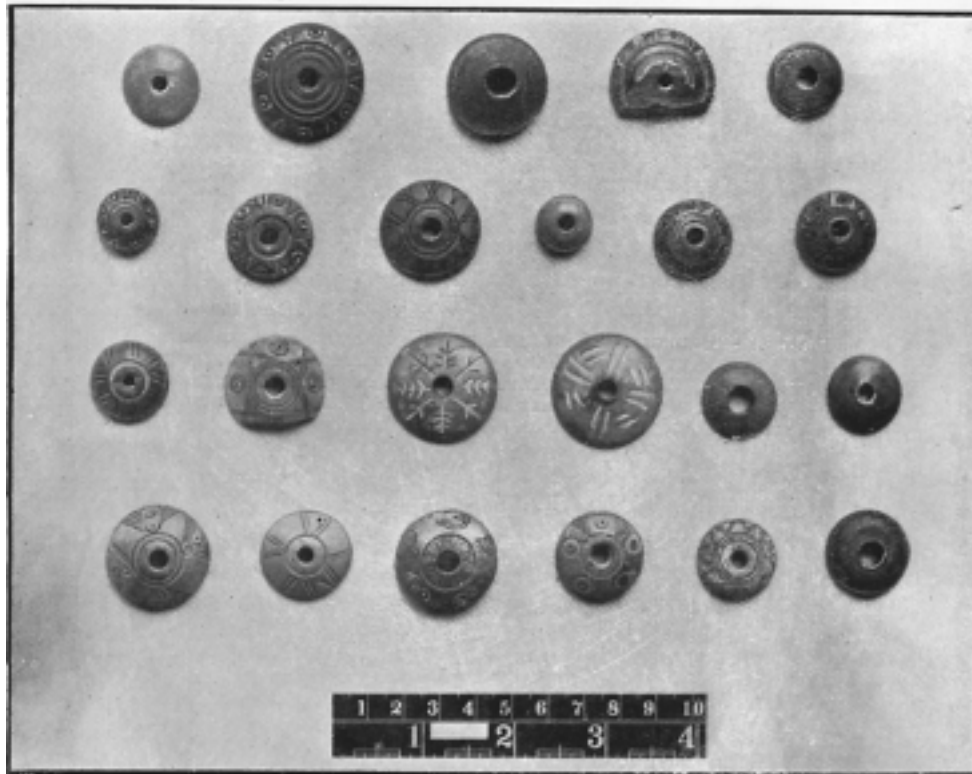


Plate 44.

[Photo by E. Roberts, Halifax.

WHORLS OF BONE, IVORY, WOOD AND STONE, COPTIC, FROM FOSTAT, CAIRO,
IN G. R. CARLINE COLLECTION

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N.B.—Figures in italics refer to Plates.

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