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REPORT

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REPORT ON THE WINCHESTER LEATHER

Introduction

Shoemaking is four-fold art or craft:

- (1) Making the upper - which includes designing it, cutting the patterns for it, cutting out the material from these patterns and joining the various sections together. This last operation is known as "closing" the upper.
- (2) Making the sole (and other bottoming sections if required), This can be a simple operation for a single-sole medieval turnshoe or a complicated one for a multi-layer Roman sandal.
- (3) Shaping the upper to a last which is a block normally made of wood and roughly foot shaped with fashion amendments. The operation is known as "lasting".
- (4) Joining upper and sole together which is called "attaching".

In addition to these four basic stages there may be additional ones for purely decorative purposes.

There are no records of pre-Roman shoes in this country but the Roman occupation brought with it quite sophisticated methods of shoe construction some details of which survive to the manufacturing industry of today. Presumably the inhabitants of these islands before the advent of the Romans wore crude foot coverings of the moccasin type (see glossary) which were both flexible and warm whereas the invaders were marching armies who depended on heavy nailed shoes. Perhaps it is an over-simplification to say that the history of shoemaking in Britain is the story of the joining together of the primitive native moccasin (to form the upper) with the Roman sandal (to form the sole) but excavated shoes appear to support this theory. It is rather curious however that although in some major Roman sites such as London and Catterick sandals, moccasins and their combination have been found, the present Winchester Roman series has not produced any ^{one-piece} moccasins but only nailed bottoms from sandals or boots.

During the last two thousand years in this country methods of shoe construction have changed radically approximately every five hundred years. When the Romans eventually left, nailing as ^a major method of sole attaching went with them and the next invaders from western and north-western Europe who were seafaring wore shoes with the uppers and soles thonged together, quite crudely at first and then very finely indeed until by about the end of the next five hundred years in the tenth-eleventh centuries, the thonging was replaced by thread stitching. These later stitched shoes were certainly made inside out and then turned the right way round, hence the name "turnshoe", but the earlier thonged ones could have been made from the toe-end backwards without turning. The Winchester Saxon series shows a complete range from the coarse thonging through fine thonging to stitching.

~~remained~~
The turnshoe ^{construction} remained the standard method for yet another five hundred years

until about 1500 when gradually it was replaced by the "welted" construction (see glossary) which has all its seams outside and does not have to be turned after making. This meant that much heavier shoes and jack boots could be made, a necessary development with the disappearance of armour. The welted method has survived to this day although the approaching end of the fourth cycle of five hundred years has seen many changes in shoemaking materials and methods brought about by applied science and engineering.

Except for two "strays", SG1 and BSS 455, both post-1850, all the shoes in the Winchester series are pre-fourteenth century and the only constructions found are nailed, coarse thonged, fine thonged and stitched turnshoe.

Roman-British nailed shoes

WP 91, BS 733, 871 and 872, are all fragmentary shoe bottoms with either empty nail holes or nails in situ. B 733 has at least three sections - insole, middle sole and sole (see glossary) - with a central joining thong still in position. BS 871 and 872 also show this feature but are more fragmentary. The most important aspect of BS 872 is however the fact that ~~two~~ of the narrow internal bottoming sections still have the lasting margin (see glossary) of the upper thonged to them as well as traces of the thong which joined them to the other bottoming components. This specimen shows that the upper was "lasted" over the toe end of last and insole by pulling it, ~~pleating~~ it and thonging it to the narrow middle section. Then the sole was nailed on, the nails penetrating the whole bottom including the lasting margin to clench on the insole surface after striking an iron last. It is rare to find the remains of the ~~pleated~~ lasting margin itself together with its bracing thong.

BS 938 also has a ~~pleated~~ lasting margin thonged to a middle but in addition the closed ~~toe~~ end of the vamp itself also remains over the end of the insole. This specimen (and others) also shows the marks of cross-bracing where ~~thonging~~ passed from margin to opposite margin across the bottom so that these margins could be drawn towards each other (this method of lasting is still carried out for some ~~shoes~~ and slippers). There are no nail holes in ~~this~~ specimen so it may have been part of an indoor shoe relying ~~solely~~ on thonging for the sole attachment (London and Vindolanda have examples of this).

BS 939 also has a small piece of thonged lasting margin; BS 1268 consists of a number of fragments of a shoe bottom with thong holes probably used during lasting but no upper now remains, ^{although there are} criss-cross impressions of bracing thong.

A typical Romano-British shoe component is the heel stiffener (see glossary) WP 90 is a good example, still moulded into shape, pleated underneath and carrying nail holes. As usual, then and now, the grain side is inwards. The Winchester series also includes other stiffeners but they are much later, e.g. BS 309 in a turnshoe with a scalloped top edge where it was overstitched to the inside of the upper quarters. Also, BS 873 may be a stiffener.

Saxon thonged shoes

Since the soles of shoes^{are} normally much thicker than the uppers the actual formation of the stitch holes for thong or thread in the two parts may be different. The sole may have holes entering and leaving the flesh side near the margin so that when the thong or thread is pulled tight a rib is formed between the two lines of holes and parallel to the margin. The upper being of thinner leather has to have the holes penetrating from one side to the other, i.e. grain to flesh, when coarse thonging is used but as this becomes finer and eventually is replaced by thread, both sole and upper can have edge/flesh seams (see glossary). In the Winchester series coarser thonging through a rib on the flesh side of the sole is shown in BS 919, 1097 and CY 89 of the tenth and eleventh centuries.

Delamination (see glossary) may reveal the flesh/flesh rib holes on the opposite surface giving the mistaken impression that they are grain/flesh ones (as in the upper).

As already stated when the thonging becomes finer it is possible to pass it through marginal edge/flesh holes in the sole instead of a surface rib and this is shown in CY 79, 87, 88 and 90, all from the first half of the tenth century. Three specimens, CY 170, 182 and 210 show an interesting change of seam at various points in the sole margin. CY 170 has a flesh/flesh rib seam except ^{from} the toe end to the base of the little toe (the outside joint - see diagram in glossary) where it changes to an edge/flesh one. CY 182 has an edge/flesh seam all round except from the outside joint to the heel seat where it becomes a flesh/flesh rib one. CY 210 has a more normal change being given a flesh/flesh^{rib} seam all round the sole except for the pointed heel-end extension where it changes to an edge/flesh one. The reasons for the changes in CY 170 and 182 are not clear; they must have produced curious looking shoes.

Many thong loops remain, still retaining their serpentine form acquired during their life in the shoe when they held sole and upper together, e.g. WP 25, CY 76, etc. The thickness of the actual thonging itself varies being as much as 3mm. for the coarse flesh/flesh rib seams and as fine as 1mm. in the transitional stage of the edge/flesh seam. Some thonging is solid, some folded and some twisted, possibly copying the twisting of fibres to make thread. It is not always clear whether the thong samples are for sole attachment or are part of an instep tie (see glossary).

Rands

The inclusion of a long strip of leather or rand (see glossary) in the upper/sole seam occurs in several specimens and has not hitherto been recorded by the writer at ~~an~~ ^{an} early date, e.g. BS 290(b) ~~in~~ ⁱⁿ a thirteenth century thread seam; BS 1091 ~~in~~ ⁱⁿ a twelfth century thread seam; CY 166 - a folded rand in a tenth century specimen, still sandwiched between upper

and sole margins; CY 167 similar to the previous one but more fragmentary. CY 211 of the late ninth century possibly has an included rand at the heel seat.

Saxon upper patterns

A characteristic feature of many excavated Saxon shoes is their "wrap round" uppers. The outside vamp/wing (see diagram in glossary) i.e. the right wing in the right shoe and the left wing in the left shoe, is extended to become the outside quarter which then passes round the back of the foot, becomes the inside quarter and is then joined to the inside vamp wing, with or without an intermediate section. The upper is virtually in one piece. A low boot upper can be made in a similar way by the skilful cutting of a single piece of leather. The present series has several examples of this type of upper, e.g. BS 286, 309, 774, 917 and 1091 and there are others which are too fragmentary for positive analysis but which appear to be of the same type, e.g. BS 932, 1259 and 1260.

Extended heel seat

Another characteristic late Saxon feature is a pointed heel end of the sole which, when the shoe is made, is turned upwards to fit between the lower back edges of the quarters and itself becomes part of the upper (similar to some modern children's shoes). This feature is shown in CY 79, 89, 90, 144, 169, 182, 183 and 210. It is important because shoes with a similar V-extension have been found at York¹, Durham² and Lund in Sweden³ suggesting that the method may be Scandinavian in origin and have spread first to the north of Britain. The change in seam where the sole turns upwards has been referred to above under "Saxon thonged shoes, CY 210."

Other upper features

Many of the shoe quarters examined have fine edge/flesh holes along the top edge with sloping grooves and slight scalloping. This indicates that a "top-band" (see glossary) was added and such top-bands have also been found. The following specimens show the scalloped stitch holes: BS 774 and 809; CY 89, 104, 164 and 230; and BS 629, 777 and 809 are actual top-bands. BS 809 confirms the theory that top-edge scalloping indicates top-band attachment since both quarter and top-band remain and match each other.

BS 1145 is unusual since it appears to be the top edge of a quarter which has been folded over and stitched down; although this is done in some modern shoes it is an unusual feature for the tenth century.

Other upper seams

The "standard" upper seam in medieval shoes is a butted one (see glossary) in which the two sections are placed edge to edge and joined through edge/flesh holes. Various specimens in the present series show this but there are at least two other kinds. BS 1274 has its two quarters joined by a face-to-face "closed" seam (see glossary) down the centre of the back - a modern feature

which is unusual at this early date (eleventh century); BS 774 appears to have a "lapped" seam (see glossary) of a hitherto unrecorded variety but this is speculation.

Decorations, knots and ties

The vamp of the thirteenth century upper, BS 496, has an extremely interesting central decorative seam made apparently by folding, stitching though the fold, flattening, stitching/^{each} side of the ridge and finally passing a thread through small slots parallel to the ridge on each side (Fig...)

CY 100, another vamp, this time of the early tenth century, has two parallel rows of decorative stitching; presumably they were originally down the centre line of the vamp.

The embossed decoration on a rectangular fragment, BS 1277, may indicate that it is part of a vamp.

In a different category is the interlocking tie thonging on the mid-eleventh century boot, CY 230. It consists of two thongs which pass through slots in each other and also through slots in the upper thus preventing the whole from being pulled out - a practical and decorative feature (Fig...)

Other instep ties are held in position by being knotted and many fragments of these survive, e.g. BS 617, 721, 797, 829, 830 and 1091.

Repairs

Several specimens are repair additions to the original shoe or indicate that repairs were made to them. Worn sole foreparts and heel seats were covered by "clumps" which were thonged or stitched on using "tunnel" holes (see glossary); in later shoes, nails were also used across the transverse edges. These tunnel holes remain, usually very well defined, both in the original sole and in the clump itself. Other evidence of repair is a double set of holes in the original sole or misplaced or enlarged holes suggesting a "do it yourself" job. Forepart clumps are represented by CY 183 and BS 309, 617, 801, 1165 and 1307. Tunnel holes in soles are shown in CY 1, 164 and 183 and BS 290, 309 and 617. Additional holes appear in BS 286. In the case of CY 183 the clump remains still attached to its sole.

Repairs at the heel seat end are shown possibly by BS 273 which takes the form of a U-shaped rand but this identification is uncertain. BS 286 is also doubtful; the size of the stitch holes suggest an unskilled hand.

CY 102 may be a repair clump but its build-up of three layers on one side suggest that it might have been a corrective wedge lift for one side of the shoe.

Fashion

Most of the specimens are too fragmentary to give much indication of the appearance of the original shoe. CY 164 is a simple pull-on "casual" of the early tenth century with a rounded toe and CY 169 is similar ^{but} although in this case although the extended V-heel seat remains, the toe end is missing.

Two centuries later, WP 27 shows a typical medieval turnshoe sole with a very narrow and curved waist but unfortunately in this case also the toe is missing. BS 1274(b) of the eleventh century may be the pointed end of a turnshoe sole.

Several shoe uppers appear to have peaked backs to their quarters: e.g. BS 1274, WP 26, CY 77 and 79.

Shoe sizes and shrinkage

Recent unpublished work by the writer indicates that leather buried in wet soil and allowed to dry out may shrink by about 10% of its original length and then stabilise after about ten years. The English shoe size scale at present in use begins at 4.1/3 in. for size 1 children's and then goes up by 1/3 in. per size to 8.1/3 in. for size 13; then it starts again at 8.2/3 in. for size 1 adults' and again continues upwards by 1/3 in. per size. An easy fixed point to remember is size 5 adults = 10 in.

Assuming a 10% shrinkage therefore, an original size 5 adults at 10 in. would now measure 9 in. = size 2 adults'.

The largest shoe sole in the Winchester series is BS 309, a turnshoe sole now measuring 290mm. in length corresponding to c. size 9 adults' so originally this may have been c. size 12½, a very large shoe indeed for this period. At the other end of the scale the twelfth century child's boot, BS 165, is now only c. size 1 children's so probably was originally c. size 2½.

Objects other than shoes

There are many unidentifiable fragments of leather of which the location and purpose cannot be determined. Some may be parts of garments. BS 1213 appears to be part of either a belt or a scabbard and some of the fragments of CY 180 also resemble a belt and WP 31 a knife sheath. The most interesting and complete object, however, is BS 67 which is an eleventh century three-piece ball cover consisting of two discs and a connecting annular rectangle. The parts can be reassembled and fit quite closely over a modern ball of diameter 60mm. BS 1265 and 1277 may also be parts of a ball cover and associated with each other.

Workshop scrap

The presence of many pieces of scrap indicates that shoemaking was being carried out on the particular site. Triangular pieces with concave sides are typical of between-section waste occurring during cutting up skins, then as now. There are also marginal pieces of skin, e.g. shanks, where the quality is too poor for use; Some of these have large holes showing where the skins were nailed or pegged out to dry after tanning and in some cases the animal's teats remain

References

1. "Excavations at South Corner Tower, York"; "Small Finds: 3. Leather Shoes" by J. H. Thornton and A. V. Goodfellow (Yorkshire Arch. J. Parts 155 and 156, Vol. XXXIX, 1958)
2. Report on Saxon shoes from Durham Castle by J. H. Thornton, 1976 (unpublished; typescript with A.M. division of D. of E.)
3. "Skor och Skomakeriteknik under Medeltiden" by Ernfrid Jafvert (Fornvännen, ed. Sigurd Curman, Stockholm, 1937)

Further reading

"Textbook of Footwear Manufacture" ed. J. H. Thornton (3rd edition 1964, Butterworth, London)

"Transactions of the Museum Assistants' Group for 1973, No. 12". The papers read at a seminar on "Excavated Shoes to 1600" held at the Institute of Archaeology in London in 1973. It contains the following:

- "Excavated Shoes to 1600" - J. H. Thornton;
- "Shoe Fashions to 1600" - J. M. Swann;
- "Excavated Shoes to 1600, Bibliography" - J. M. Swann;
- " Interpretation of Wear Marks seen in Footwear" - A. W. Swallow;
- "The Treatment of Waterlogged Leather" - W. K. Rector;
- "Leather Artifacts from Vindolanda, 1972-3" - A. C. Metcalfe and R. B. Longmore
- "A Glossary of Shoe Terms" - J. H. Thornton.

Addition to previous text (catalogue)

p. 32 CY 11 Small fragments of leather strip or thong and possibly bark. Also some stitching thread made from a bast fibre and with a Z twist; its contortion suggests it has actually been used and retains its stitching loops.

Correction to previous text (catalogue)

p.12 BS 733 line 3 should begin: "(c) part of the sole" and not "part of the insole".

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A GLOSSARY OF SHOE TERMS

~~(for use when describing early shoes; some modern terms are not included).~~
~~("Shoe" also includes "boot" unless otherwise stated)~~

BOTTOM: the underpart of a shoe comprising one or more of the following sections: sole, insole, middle, welt, heel and possibly other minor sections.

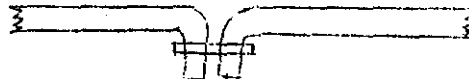
BRACING: when an upper is lasted on to an insole, the lasting margins have to be held in position until welt or sole is attached. This can be done by nails or by bracing thread criss-crossing and pulling the margins inwards. Although the thread may not survive in buried shoes, the imprint of it is often visible.

BUTTED SEAM: the edges of adjoining upper sections are butted together and joined by a seam, often an edge/flesh one (q.v.), invisible on the reverse side.



CHANNEL: a row of stitching holes, sometimes set in a groove.

CLOSED (or CLOSE) SEAM: two upper sections are stitched together face to face along an edge and then opened out and flattened.



CLOSING: stitching upper sections together.

CLUMP (or CLUMP SOLE): a half-sole added to a shoe, usually as a repair.

CONSTRUCTION: the shoemaking term for the method by which upper and bottom are joined together (see NAILED, TURNSHOE, WELTED).

DELAMINATION: the condition of leather which has separated during burial into grain and flesh layers; due to the incomplete penetration of the tan liquor when it was made.

~~"EARED" SHOE:~~ in the 16th century following a long period of pointed shoes, toes became very square and wide; for a short time, c. 1535-55, the corners of the toe were extended sideways resembling ears.

EDGE/FLESH SEAM: the stitching holes are pierced from the edge of the section (usually the sole) to the flesh side; commonly used in the majority of mediaeval turnshoes (q.v.).



FLESH: the inner surface of a piece of leather originally next to the animal's body; the loose fibres are usually prominent (see GRAIN).

FOREPART: the front of the shoe (or sole or insole).

GRAIN: the outer surface of a piece of leather originally bearing the hair, fur, wool, etc. Each animal has a characteristic grain pattern and the surface is normally smooth. Soles usually have the grain side downwards resting on the ground; insoles usually have the grain side upwards so that the foot rests on it. Uppers normally have the grain side outwards except for suedes.

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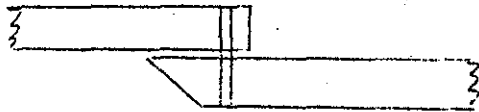
A Glossary of Shoe Terms cont...

HEEL: a component added to the rear (or seat) end of the sole, originally for utility but then as fashion. May consist of separate "lifts" ("built heel") or be a block of wood covered with leather or other material. In either case the bottom section which rests on the ground is called the "top-piece".

INSOLE: the inside bottom part of a shoe on which the foot rests, sometimes referred to as "the foundation of the shoe". In a turnshoe (q.v.) there is no separate insole, the foot resting on the inner flesh surface of the sole which also acts as an insole.

INSTEP: a rather imprecise area on top of the foot between the rear of the toes and the ankle joint. The name is also incorrectly used for the arch or waist of the foot underneath.

LAPPED SEAM: two upper sections are overlapped and stitched together right through the full substance of both sections.



LAST: a wooden block on which the shoe is made roughly corresponding to the shape of the foot but with certain differences due to fashion and shoemaking requirements. The Romans also used iron lasts but these were anvils for turning over nail points and not apparently moulds for shaping.

LASTING: the operation of shaping the upper to the last.

LASTING MARGIN: the lower edge of the shoe upper which is turned under and fixed to the insole (or sole) during lasting.

LATCHET: the top fronts of the quarters (q.v.) are extended into straps which pass over the instep of the foot, sometimes resting on the tongue of the shoe vamp. These straps or latches may either not quite touch each other, in which case they may be joined by a string or ribbon, or they may overlap and be joined by a buckle.

MIDDLE(or MIDDLE-SOLE): an additional section placed between sole and insole.

MOCCASIN: a shoe in which the upper material passes under the foot thus producing a type of "foot bag". A reinforcing sole may be added.

NAILED CONSTRUCTION: a method of shoemaking in which the upper is nailed to the bottom, the lasting margin (q.v.) being sandwiched between sole and insole. If the nails have large heads they also serve as a sole reinforcement. Commonly found in Romano-British shoes.

QUARTERS: the sides of a shoe upper joining on to the vamp at the front and meeting each other at the back of the heel. If there is a seam here it is called the "backseam". The name "quarters" is derived from the fact that if there is a join at the back then a pair of shoes has four of them. Mediaeval shoes do not usually have a backseam, the inside and outside quarters forming a continuous section.

RAND: a long narrow strip of leather of roughly triangular cross-section included in an upper/bottom seam (or elsewhere) to make it more waterproof or decorative. Some early turnshoes have such a rand and if this is wide enough, an additional sole (possibly a repair one) can be stitched to it. (see TURN-WELT).

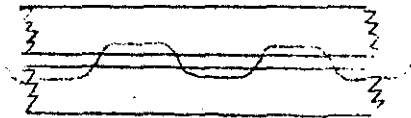
SANDAL: essentially a sole (single or multi-layer) held on to the foot by straps varying in complexity.

SEAT (or HEEL SEAT): the rear end of insole or sole on which the heel of the foot rests.

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A Glossary of Shoe Terms cont....

- SHANK: a reinforcement placed centrally between the lasting margins (q.v.) of the waist (q.v.) of a shoe and between sole and insole. Its purpose is to prevent the shoe from bonding in the waist, particularly when a heel is used.
- SOLE: the part of the shoe which is in contact with the ground. If the shoe has a separate heel (q.v.) the bottom section of this next to the ground is called the "top-piece".
- STIFFENER
(or HEEL STIFFENER): a reinforcement placed inside the back of the quarters. In early shoes the top edge is often stitched to the quarters by a type of hemstitch (or overseam or whipped seam) which produces a scalloped effect along this edge; the bottom edge is lasted in with the upper.
- STITCH LENGTH: the distance between the centres of stitches or stitch holes in a row.
- THROAT: the central portion of the rear end of the vamp resting on the instep of the foot.
- TIE-HOLES: the holes in quarters, lachets or tongues through which a string, ribbon or thong is passed to hold the shoe on the foot.
- TOE PUFF: a reinforcement under the toe-end of the vamp.
- TONGUE: a backwards extension from the vamp throat (q.v.) resting on the instep of the foot. Latchet ties (q.v.) may pass over or under it and sometimes there is a pair of holes through which the tie string passes.
- TOP-BAND: a narrow strip of leather or other material stitched to the top edge of the quarters (or legs of a boot) for decorative purposes.
- TOP-PIECE: the bottom section of a heel which actually rests on the ground.
- TREAD: the widest part of a sole forepart in closest contact with the ground.
- TUNNEL STITCH: a seam used in repairing to attach a new piece of leather, e.g. a clump sole (q.v.) on top of an old one. The holes enter the surface of each piece, pass for a short distance through the substance (between grain and flesh) and then reappear on the same side. Sometimes called a "caterpillar" stitch.



- TURNSHOE CONSTRUCTION: the shoe is made inside-out (normally with the flesh side outwards) by sewing the lasting margin (q.v.) of the upper to the edge of a single sole which also acts as an insole. The shoe is then turned the right way round so that the grain side of the leather is on the outside of the shoe and the upper/sole seam is now inside. It was apparently introduced to this country by the Saxons.
- TURN-WELT: a turnshoe which has an extra wide rand (q.v.) included in the seam so that this becomes a welt to which a first sole, and later, a repair one, can be stitched. It is the intermediate stage between a turnshoe and a welted shoe, appearing c. 1500
- VAMP: the front section of a shoe upper covering the toes and part of the instep.
- VAMP WINGS: the sides of the vamp extending backwards either side of the throat to join the quarters.
- WAIST: the narrow part of a shoe sole or insole under the arch of the foot (also called the waist).

A Glossary of Shoe Terms cont.....

WELT: a narrow strip of leather sewn round the lasting margin (q.v.) of the upper and joining it either to the insole edge or to a "rib" raised on the flesh side of the insole near the edge. The sole is then attached to this welt by a second seam. It appears to have been developed from the rand (q.v.) and the two names are sometimes confused with each other.
(see "WELTED CONSTRUCTION")

WELTED CONSTRUCTION: a method of shoe construction introduced to this country c. 1500 and still used (although mechanised). It takes place in three stages:

- (1) the upper is lasted and held in position by nails or bracing thread (q.v.);
- (2) the lasted upper is sewn together with a welt (q.v.) to the edge of the insole (early examples use the actual edge itself with an edge/flesh seam (q.v.) but later ones use an upstanding rib set in a short distance from the edge);
- (3) the sole is then stitched to this welt.

A fuller description of some of the above terms and also an account of the origin and development of shoes will be found in:

"TEXTBOOK OF FOOTWEAR MANUFACTURE" edited by J.H. Thornton,
(3rd edition 1964, reprinted 1971, Butterworth & Co., London)

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