TREATMENT OF VARICOSE DISEASES OF THE LOWER LIMBS*

BY

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The simplification of the treatment of varicose disorders has led in recent years to the development of a rather uncritical attitude towards the subject which, if it persists, may so influence practice as to tend to diminish the efficiency of the newer therapeutic methods. This paper is in part an attempt to assess the value of some of these methods, and questions of aetiology and pathology are discussed only in so far as they bear upon this. The therapeutic methods described are based on a personal experience of over a thousand cases, and represent the results of that experience rather than a survey of all the methods of treatment in current usage.

Varicose diseases are common amongst all classes of the community, and give rise to a large amount of discomfort, pain, and disability, and, on account of the complications of phlebitis, dermatitis, and ulceration, lead to a great deal of crippling and ill-health. The introduction of sclerosing methods has brought about a revolution in the treatment of a group of diseases which had previously proved extremely refractory, and in the treatment of which the surgeon was only consulted as a last resource. Experience has shown that the newer methods are simple, safe, and efficient, and that their employment is capable of preventing the more serious complications of varicose diseases. At the same time recent experience has shown, first, that although the greatest credit is due to injection methods they must be carried out patiently and efficiently and with a critical appreciation of their possibilities; and, secondly, that operative treatment is still required as an adjuvant in a small proportion of cases if the best results are to be obtained.

Aetiology in Relation to Treatment

Unfortunately it is still true to say that nothing is known about the ultimate cause of varicose disorders. A family history of the condition is present in over one-half of the cases, and in some families practically all the members are affected. The sex distribution of the present series gives a ratio of four females to one male. A striking feature of the female cases is that the condition tends to manifest itself for the first time at three definite age periods—adolescence, the early years of child-bearing, and the menopause. Numerically, the cases in the first and third of these groups form but a small proportion of the total, but none the less they form well-defined groups. The cases beginning in adolescence often progress rather slowly. When varicosities develop during pregnancy they are seen usually at a very early stage, generally about the second or third month, a fact which would lend support to an endocrine rather than to a mechanical view of their origin. It is frequently noted that the development of the condition in the menopausal patient is extremely rapid during the course of a year or two. This association between the development of varicose conditions and puberty, pregnancy, and the menopause suggests an aetiological relation to the endocrine stresses of these periods.

A further important feature closely related to the question of treatment is the fact that varicose disorders are invariably progressive, and that once the condition

has developed mechanical factors tend to aggravate it. Arrest of the disease is rare, and natural cure does not take place apart from that which may occasionally follow an attack of acute phlebitis. The importance of these features of the natural history of the disease must be remembered when discussing the question of possible recurrences after treatment.

Types of Varicose Veins

From the point of view of treatment little is to be gained by any extensive subdivision of the various anatomical types of varicose veins. It is essential, however, to recognize that varicosities may be primary and idiopathic, or secondary and compensatory.

Primary varicosity is of three main types. First, there is the type affecting a part or the whole of the internal or short saphenous vein or any portion of the lower limb unrelated to any anatomical vein. Secondly, the type of varicosity best described as "ectasia" is found chiefly in the male sex and is prone to develop about the age of 18 or 20, especially in those who are very athletic. The veins in these patients are prominent and dilated and their walls are often thickened, and although the valves are incompetent tortuosity may be absent or slight. It is important to recognize this group of cases, as the results of injection treatment are often disappointing and are frequently regarded as failures. The third group comprises the intracutaneous varicules, or dilatations of vessels actually within the skin itself. Though these varicules may appear in association with larger subcutaneous varicosities they are frequently present alone in women. In the former case they may disappear as the result of sclerosis of subcutaneous veins, but when alone they do not as a rule require treatment.

Secondary varicose veins develop as a compensatory mechanism where the deep veins of the limb have been obliterated as the result of thrombosis during the puerperium, after operations, or during the course of acute specific fevers, etc. In these cases a history of the sudden onset of pain and oedema in a limb during the course of one of the preceding conditions is suggestive evidence of the probable secondary nature of the varicosities; the collateral circulation not infrequently involves the lower abdomen and the trunk. The majority of these patients show in addition some degree of permanent lymphatic obstruction.

Value of Accurate History

The necessity for an accurate history both of the varicose diseases and their progress and of the patient's general health, together with a careful clinical examination, cannot be too strongly stressed in relation to the questions of treatment and of prognosis. Certain facts in the history or certain signs in the clinical examination may be of such outstanding importance as to affect closely the question of treatment. They may contraindicate certain forms of treatment or be determining factors in regard to prognosis. The best results cannot be obtained unless the approach to each case is both individual and systematic.

The points in the history to which special attention should be paid are the age at which the varicose condition developed, its progress since development and the associated symptoms, the number and the effect of pregnancies, and the history of oedema, phlebitis, ulceration, or other complication. With regard to the past history, not only must inquiry be made about the general health, but especial attention must be directed to the question of phlegmasia following pregnancy, operation, typhoid fever, etc. A family history of varicose diseases must always be investigated.

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The clinical examination of the patient includes not only the investigation of the type and severity of any varicosities, but also an examination of the skin from the point of view of early congestive changes, dermatitis, or ulceration. Oedema never results from uncomplicated varicose veins, and its presence should always lead to a search for some local or general cause. The presence of any old or recent phlebitic areas should be noted. In all cases in which elastoplast or a similar technique may be employed the condition of the arteries of the limbs should also be examined.

Principles of Injection Treatment

The object of all forms of injection treatment is to introduce into the damaged veins a chemical solution which will initiate a series of changes in the endothelium leading to thrombosis of the vein and its eventual conversion into an almost imperceptible fibrous cord. The ideal injection medium must be non-toxic; in the doses used it must produce no undue pain during injection; it must be free from local or general dangers; and it must be introduced in such a way that no important physiological changes may follow the obliteration of the injected veins. The various solutions which produce thrombosis act either on account of their osmotic pressure or on account of their chemical composition, and occasionally by a combination of these two features.

No attempt will be made to review in detail the various agents which have been given for this purpose. In the present series of cases quinine and urethane solution has been used almost exclusively, sodium salicylate being employed in those patients with an idiosyncrasy towards quinine, and sodium morrhuate in a very small group of patients. With a quinine solution the intravenous technique must be perfect, otherwise the injection of the solution outside the vein, or its leakage into the tissues after injection, may be followed by local necrosis. Undue susceptibility towards quinine has not been noted in any of the male cases, but has been observed in mild forms in rather less than 1 per cent. of the female cases. Quinine-urethane solutions appear to be the most certain in their thrombosing action; with the empty-vein technique and small doses they are extremely efficient.

Quinine-urethane solutions have the additional advantage of being painless during injection. Pain during the actual injection is due to the leakage of the drug into the tissues outside the vein, and should be regarded as an indication for the immediate cessation of the injection. Salicylate solutions, on the other hand, are invariably extremely painful during the actual injections, especially when the more concentrated ones are used, and they are much less certain in their action, owing to the rapid development of tolerance on the part of the veins towards them. Sodium morrhuate suffers from two disadvantages: first, it is necessary to add 0.5 per cent. phenol to ensure sterility of the solution; and, secondly, it is certain that in some instances thrombosis occurs immediately after injection.

Technique of Injections

Injections should begin in the most distal veins, working gradually up the limb. If the proximal veins are thrombosed first the distal ones remain patent but become smaller, and in consequence more difficult to inject. The greatest efficiency of the injections is obtained when they are made with the empty-vein technique. A light rubber Esmarch's bandage is applied to the limb proximal to the proposed site of the injection while the patient is standing. The patient then lies down on a couch and a small block is placed under the heel. After the skin has been cleansed with ether the needle of the syringe is inserted into the distended vein, and as soon as its position has been

confirmed by the withdrawal of blood into the barrel the tourniquet is loosened with the left hand and the injection given.

The dosages of quinine-urethane solution must naturally vary with the size and type of the vein to be injected, with the experience of the surgeon, and with the individual patient, though in all cases it is probably wiser to err on the side of small rather than large doses. A dose should be aimed at which will produce thrombosis in approximately five or six inches of a medium-sized vein. If a greater length than this is thrombosed at any one sitting the resulting discomfort may inconvenience the patient. These results can usually be achieved by using quinine-urethane solution in doses of from 1 to 2 c.cm., more often nearer the former than the latter amount. A dressing of collodion and strapping should be applied in order to prevent possible contamination and any leakage of blood mixed with quinine-urethane solution through the puncture in the vein wall.

With regard to the question of the frequency of injections, the only really absolute rule is that the larger the size of the veins the longer should be the intervals between injections. It is found in practice that with veins of average size weekly injections are well tolerated, but while this interval can be decreased in the case of smaller veins, it must be increased in the case of larger ones. As a matter of experience, however, it is found that needlessly long intervals between injections, apart from lengthening the time of the treatment, seem to diminish the degree of thrombotic response.

If the dosage has been too high the thrombotic reaction may be excessive. The reaction is similarly likely to be excessive when the injection is made into a vein devoid of collateral anastomoses. Such veins are often present in the thigh, and in all injections in this situation the dosages should be rather smaller than for comparable veins in the calf. With efficient technique local leakage at the site of injection should be avoided and the possible development of an eschar entirely obviated. In the series of cases now under consideration no pulmonary emboli, either fatal or non-fatal, were consequent upon over 10,000 injections.

Contraindications

The contraindications to injection treatment may be either relative or absolute, and either temporary or permanent. The question of injections in patients with associated serious disease must always be considered in relation to the prognosis of the latter. Renal and cardiac failure are obvious instances of absolute contraindications, though compensated cardiac disease is no bar to successful injection treatment. Skin disease, of either an acute or a chronic nature, which involves the varicose area must always be considered as a temporary but definite contraindication to treatment.

In the case of any patient suffering from acute phlebitis an interval of at least six months should be allowed to elapse after the subsidence of the phlebitis before proceeding with injections. This time limit of six months is purely arbitrary, but it has been found satisfactory in practice. Of recent years some writers have actually advocated the treatment of phlebitis by means of proximal sclerosing injections. This would appear to be open to very grave objections as acute phlebitis is in some instances at least bacterial in origin, and it is certain that some of the published cases of fatal pulmonary emboli after injection treatment have been in patients in whom this time interval had been ignored.

During pregnancy it is as a rule neither necessary nor advisable to carry out injection treatment for varicose veins. The condition of the veins invariably improves rapidly after the termination of the pregnancy, and if treatment is necessary it can much more easily be carried

out at that stage. Occasionally, however, patients are seen in whom the extent of the varicose veins or the degree of associated discomfort is such as to necessitate urgent treatment. In these patients injections should be given, but quinine must not be used owing to the risk of producing abortion, though the risks are probably more theoretical than real. Either sodium salicylate or sodium morrhuate solution should be used, but the extreme pain produced by the former should be borne in mind.

Treatment of Varicose Ulceration

Ulceration arises as a mechanical complication of the venous stagnation or even reversal in a limb with a varicose circulation. Whatever may be the factor initiating the ulceration the peculiar features of the varicose circulation are responsible for its chronicity. The actual bacterial flora of the ulcer is of minor importance. Healing of varicose ulcers may be brought about by any of the methods which lead to temporary or permanent obliteration of the varicose circulation. Thus rest in bed or some form of external support may result in temporary cure, and a permanent cure may follow injection or excision of the affected veins. In a series of ulcer cases reported in my Hunterian Lecture in 1929 it was found that 87 per cent. healed simply as a result of obliteration of the proximal veins.

Small recent ulcers usually heal quite rapidly with injection of the veins and the application of a calamine dressing to the ulcer. The larger and older ulcers with a moderate degree of surrounding oedema and fibrosis respond rapidly to injection treatment combined with the use of elastoplast. The injections should be carried out at fortnightly intervals at the time when the elastoplast is changed. The huge ulcers of the lower third of the leg that almost or completely surround the limb and are invariably associated with marked changes in the soft tissues and with extensive periosteitis present a more difficult problem. Persistence with elastoplast treatment and the injection of any associated veins may lead to the eventual healing of such ulcers, but unless some form of external support is used, either for a prolonged period after healing or even permanently, recurrence is almost certain to take place. The most intractable type of ulcer of all is that associated with deep thrombosis. The characteristics of these ulcers are very similar to those in the preceding group, but the limb as a whole is invariably grossly oedematous, and associated varicose veins may not always be present.

Treatment of Phlebitis

The question of the treatment of phlebitis in varicose veins can be adequately considered only after a definition of the term and a brief review of the various clinical types. Under the general heading of "phlebitis" are included all those cases in which a varicose vein thromboses, irrespective of the extent of the local inflammatory signs or the degree of constitutional disturbance. At one end of the scale are those cases which may be regarded as purely thrombotic in origin, secondary to changes in the damaged endothelium, and in which local inflammatory signs are negligible and constitutional disturbance is absent. At the opposite end of the scale are those cases of rapidly spreading septic thrombosis associated with marked local inflammatory signs together with fever and severe constitutional disturbance and possibly with embolic phenomena. The third group comprises cases falling clinically midway between the other two, in which local inflammatory signs are present with possibly mild fever or constitutional disturbance. Of these three groups the first probably represents a purely thrombotic process of non-bacterial origin, the third a septic bacterial phlebitis,

and the second an intermediate type in which the thrombotic and the infective elements cannot be sharply distinguished.

Although in general the word "phlebitis" includes these three types of the disease, the clinically mild course of the majority of cases would suggest a purely thrombotic origin. Apart, however, from the frankly septic cases, it is quite impossible to determine with any degree of certainty the cases in which a bacterial element is present.

The small thrombotic lesions are best dealt with by putting the limb in elastoplast and allowing the patient to walk; in these uneventful recovery is the rule. In the case of spreading phlebitis elastoplast treatment should be similarly carried out, but it is often found that arrest of the condition is not brought about unless the patient is in bed. Operation offers the best prospect of cure in cases of this type in which huge varicose veins have become extensively thrombosed as the result of the phlebotic process. Unless this is done the patient is left with a large inflammatory mass of veins which may take three months or longer to resolve. The operation should be performed at the end of three or four weeks, and the thrombosed veins excised together with any adherent portions of overlying skin. When the local physical signs, the temperature chart, or the presence of pulmonary or other complications suggests that the local lesion is a septic one, the saphenous vein should be ligatured immediately at its junction with the femoral vein. At the same time it may also be necessary to evacuate septic clot from the thrombosed veins.

Subacute and Chronic Phlebitis

It is impossible to classify accurately the various types of subacute or chronic phlebitis, but it is essential from the therapeutic standpoint to attempt to distinguish these from the more acute conditions. A small group of cases exists in which, following an attack of acute phlebitis, the pathological process passes into a subacute or chronic phase. With complete rest in bed the local inflammatory signs resolve almost entirely, but as soon as the patient starts to get about the inflammatory process in the veins lights up again. This sequence of events may be repeated on many occasions and over a considerable period of time. A patient who recently came under my care had spent a year in this way in an attempt to get rid of the phlebitis. Operation is the only certain cure for this type of the disease.

A second type of chronic phlebitis is seen occasionally in women, with extensive varicosity in the calf. A history of an acute onset is unusual, but when the patient comes under observation a mass of firm, ill-defined, thrombosed veins is present in the lower third or half of the calf. The whole area is hard and indurated, and the individual veins are at times difficult to recognize, but on palpation there is a definite line separating the indurated area from the upper part of the calf. Prolonged elastoplast treatment appears to be the only practicable method of treatment. If this is carried out the induration and thickening of the tissues of the calf gradually resolve and the phlebitis clears up. Owing to the extent of the disease and the degree of involvement of the skin and soft tissues operative treatment is not possible.

Deep Thrombosis

The term "deep thrombosis" is used here to cover all those conditions of phlegmasia of the lower limbs developing suddenly as complications in the puerperium, during the course of specific fevers, during the post-operative period, etc. The onset of the condition is always acute and the patient is invariably left with a limb in which there is gross circulatory disturbance. Clinical

observation suggests that in almost all cases lymphatic obstruction is present, and in many cases associated thrombosis of the deep veins. The name "deep thrombosis," though inexact, has been preserved for a well-recognized clinical condition.

Patients in whom deep thrombosis has occurred rarely, if ever, subsequently get an entirely normal limb. Oedema usually appears after exercise and in many cases reaches a serious degree, but it is always relieved by recumbency. The swelling of the limb may produce anything from mild discomfort to extreme pain. At the same time, if there has been an associated thrombosis of the deep vessels evidence of the development of a collateral circulation over the lower abdomen, or even as far as the intercostal spaces or axilla, may be present. The saphenous vein itself may be involved in this compensatory process. Owing to the impairment of the lymphatic and the venous return in these limbs they are particularly prone to infection, and if ulceration does arise it usually assumes a most intractable form.

Pulmonary embolus is the immediate complication most generally feared, though in this connexion it is perhaps encouraging to remember that of the patients who come to the post-mortem room as a result of a pulmonary embolus few have ever shown signs of oedema of the lower limb during life. In the acute stage little can be done apart from absolute rest, and this is usually enforced for six weeks. Following this the return to activity should be gradual, and exercise should be limited to that which produces nothing more than a slight degree of oedema. The more the limb is allowed to remain oedematous the more easily will oedema recur. The more severe degrees of oedema can only be treated by means of elastoplast, but the milder degrees can be adequately controlled by various types of stocking.

Injections in Deep Thrombosis

Owing to the development of varicosities in these limbs patients are often seen in whom the question of the advisability of giving injection treatment is raised. At one time I always regarded the presence of a deep thrombosis in a limb, with evidence of a collateral superficial circulation, as a definite contraindication to injection treatment. Subsequent experience has shown that though the general rule is a sound one there may be exceptions. Several points must be considered. First, the discomfort or pain which these patients suffer is largely lymphatic in origin and not venous, and is therefore unlikely to be much improved by thrombosing the veins. Secondly, in all cases in which there is anything more than a mild degree of oedema a very sharp reaction may follow the injections, with the development of a marked degree of periphlebitis.

It will be found that in general the cases in this group which respond best to injection treatment are those in which oedema is slight but the veins are large. In all cases in which injection treatment is considered an attempt should be made to assess the symptomatic improvement likely to result from obliteration of the veins. The foregoing observations apply equally to those limbs which are the site of deep thrombosis and in which ulceration is also present. When symptoms are mainly due to the presence of oedema some form of external support becomes inevitable; and this resolves itself in the milder cases to the use of stockings, and in the more severe to the continued use of elastoplast or similar bandages.

Massage and the use of sinusoidal baths may be mentioned as additional methods of treatment. The resulting symptomatic improvement may be very great, and it is often worth while to prescribe a course of a month's treatment two or three times a year. But it must be borne in mind that patients with deep thrombosis have

inevitably some degree of circulatory failure of the limb, and for that reason a modification of their activities, depending upon the degree of failure, is almost unavoidable. When a limb has been the site of a deep thrombosis treatment by means of radiant heat should be avoided, for it does not appear to improve the local condition, and it is very easy to burn such limbs. Some of the most intractable ulcers I have seen have been those in which ulceration has followed a burn of this type.

The Place of Operation

The introduction and the development of injection methods has overshadowed operative measures to such an extent as to suggest that these actually have no place in treatment. But experience has shown that there are definite indications for operative intervention.

In the patient with uncomplicated varicose veins certain features may indicate the advisability of operative treatment, either alone or, more often, in conjunction with injections. First, the veins may be of such colossal size that the discomfort and length of time involved in the process of sclerosis will make operative treatment simpler and quicker. Secondly, the whole saphenous tract may be varicose, and on account of incompetence of the valves the reflux of blood may be so great that thrombosing solutions will have little or no effect. Thirdly, the condition of ectasia rather than varicosity may be present, in which case it is difficult to obtain thrombosis. Some form of operation is usually advisable in these groups; the exact operation to be performed, however, can only be determined by a consideration of the anatomical distribution of the veins and their severity in the individual patient, but it may include excision operations in the case of very large veins, Trendelenburg's operation, or simple ligature operations, followed always by injection treatment to the remaining distal veins.

Factors affecting Prognosis

Owing to the extremely wide variations in the degree of severity of varicosities of the lower limb it is difficult to lay down general rules relating to the question of prognosis, but certain factors affecting this can be considered. From the point of view of treatment the fact that the disease is progressive cannot be ignored. Injection treatment will cure existing veins and it will slow down the development of varicosities in other veins, but it cannot prevent the formation of new varicosities. A bad family history is also an important factor, as it indicates a very strong predisposition on the part of the patient to the disease. Similarly, the rapidity of development frequently has important bearings upon the question of immediate prognosis. The more rapid it has been, the more guarded must be the prognosis.

The actual age at onset does not appear to play a very important part; on the other hand, the age at which treatment is undertaken, especially in the case of women, is always significant. The possibility of subsequent pregnancies has to be considered in relation to their effect on the veins of the lower limbs, and although, as has been stated, there is a small group of cases in which the varicose condition appears rapidly about the time of the menopause, in general veins do not progress markedly after this time.

The most important single factor in prognosis after injections is the degree of completeness of the obliteration by thrombosis of the varicose circulation. It is useless to regard as treated a patient to whom a few injections have been given and in whom a considerable number of veins have been left untreated. All varicose vein cases should be removed, say, three months after the completion of injections. The more severe the condition the more essential it is to follow this rule. It is often

found that veins have been missed and are still present, and the more sponge-like and diffuse the varicosities the more certain is this to be the case. Any existing veins should then be treated, and the patient should be seen again at the end of a further three months. It is possible in this way to say that before a patient is discharged all "treatable" veins have been occluded.

Recanalization and Phlebitis

The question of recanalization subsequent to thrombosis is a rather thorny problem. It is certain that the thrombi which develop spontaneously in veins do in some instances become canalized and lead to patency of the vessel. As an instance of this may be quoted the fact that even after a severe attack of acute phlebitis veins are not necessarily always obliterated, and in St. Bartholomew's Hospital Museum is a specimen (No. F. 296) illustrating this process of recanalization in a deep vein of the limb. The problem is further complicated in the case of therapeutic thrombosis by two other possible sources of error. First, varicose diseases of the lower limbs are progressive, and veins which were thought to be recanalized old ones may actually be new channels. Secondly, unless cases, particularly the more severe ones, are followed up in the manner described, it is not difficult to consider as new varicosities vessels which have never been thrombosed. From the practical point of view it would appear probable that the tendency to recanalization should be greatest in the diffuse type of varicosity with large numbers of anastomosing channels.

Many of the questions relating to the prognosis in phlebitis have already been discussed. Pulmonary emboli remain the bugbear of this complication. It is difficult to obtain accurate statistics relating to the incidence of emboli, but it would seem that in the past a needless boggy has been made of this danger. Emboli, both fatal and non-fatal, do occur during the course of phlebitis and are recorded from time to time in the medical journals. The risk in this respect is naturally greatest when the process is a frankly suppurative one. So far as my personal experience goes I know of no case of a fatal or non-fatal pulmonary embolus arising in this way.

Prognosis in Ulceration

Many of the factors affecting the prognosis in ulcer cases have been considered. In general, the more recent the ulcer and the smaller its size the better is the prognosis. The larger the ulcer the greater the degree of local scarring and fixation to the underlying bone, and above all the greater the extent of actual involvement of the bone the slower is the rate of healing. The permanence of healing depends upon the extent to which associated veins have been thrombosed, the nature of the resulting scar, and its relation to the underlying bone. The foregoing factors all apply to ulcers occurring in the limbs which are the site of deep thrombosis. In this group the greater the degree of oedema the worse the prognosis, and, conversely, the greater the extent of any varicosities the better the prognosis.

From the purely cosmetic point of view the best results following injection treatment are obtained in those cases in which the tissues overlying the vein do not show any marked degree of atrophic change. Injection of a thin-walled vein covered by an equally thin layer of squamous epithelium is certain to be followed by some permanent discoloration or pigmentation at the site of obliteration, whereas if the overlying skin is normal the thrombosis of the vein does not give rise to any permanent local change.

Summary

1. The present paper is an attempt to assess some of the methods employed in the treatment of varicose veins, an assessment which is important in view of the rather uncritical attitude towards the subject which has been brought about by the recent simplification of some of the therapeutic methods employed.
2. The experiences recorded are based on over one thousand consecutive cases under my care.
3. The sex distribution of the cases gave a ratio of four females to one male.
4. A family history of varicose veins was present in over 50 per cent. of the cases.
5. In women varicose veins tend to appear during the periods of endocrine stress—namely, puberty, the early years of child-bearing, and at the menopause.
6. Numerically the group in which the veins first appear during pregnancy is by far the largest, and the veins usually appear early in pregnancy during the second or third month.
7. Varicose diseases are invariably progressive, arrest is unusual, and natural cure is rare, apart from that which occasionally follows acute phlebitis.
8. From the point of view of treatment varicose veins may be divided into primary and secondary ones. Primary varicose veins may be true varicosities, ectasia, or varicules. Secondary varicose veins develop as the result of obstruction of the deeper veins, and are usually associated with lymphatic obstruction.
9. In all cases an accurate history and a careful clinical examination are essential if appropriate treatment is to be carried out and the best results obtained.
10. The principles underlying injection treatment are set forth and the technique of the method described.
11. The contraindications to injection treatment are referred to.
12. Varicose ulceration is a mechanical complication of the venous stagnation; its treatment is discussed.
13. The use of the word "phlebitis" is discussed, and although it is employed to cover conditions as diverse as thrombosis and septic phlebitis, it is suggested that the most frequent type of phlebitis in varicose veins is in reality a thrombosis.
14. The clinical features and treatment of subacute and chronic phlebitis are described.
15. An account is given of so-called deep thrombosis, together with its clinical features, risks, prognosis, and treatment.
16. The place of operation in the treatment of varicose veins is discussed as regards uncomplicated cases and in cases complicated by acute, subacute, and chronic phlebitis.
17. Prognosis is discussed in relation to the treatment of uncomplicated cases, and in cases complicated by phlebitis, deep thrombosis, and ulceration.

We have received a copy of the *Proceedings* of the Punjab Branch of the British Medical Association for the quarter ending March, 1936 (vol. v, No. 2). This prints in full papers delivered in the last three months, and notably those which were presented at the annual meeting of the Punjab Branch in February. They include one paper from a symposium on gastro-duodenal disease and an account of some original work on the vitamin A content of "ghee," a buffalo-milk butter clarified to resemble oil. The secretary, Dr. N. R. Dharmavir, and members of this Branch of the Association seem to have carried through an ambitious programme very successfully. The meetings are held in the King Edward Medical College, Lahore.