stance, the findings, which are noted on the chart (Fig. 3198), are those of a case of mitral regurgitation with a moderate degree of hypertrophy.

After the examination, which should not require more than from fifteen to thirty minutes to complete (depending on the length of the medical blank and the skill of

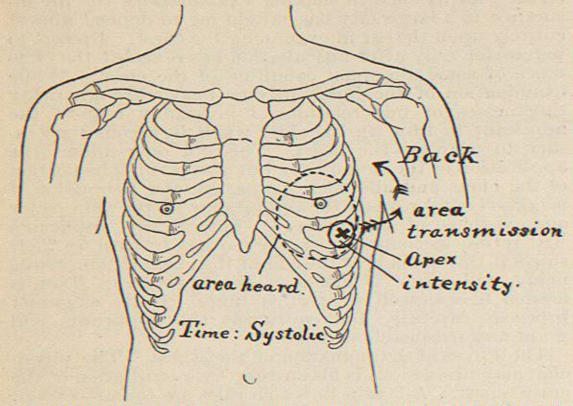

FIG. 3198.—Convenient Form of Chart for Recording Data relating to Heart Murmurs.

the examiner), lengthy discussion or expression of opinion as to the applicant's condition should be avoided. The simple statement, "I am unable to tell you what is the result of the examination until after the urine tests shall have been made," will make the applicant understand that the examiner is not ready to commit himself. Agents complain they have great trouble in placing substandard policies after examiners have told the applicants, before the examination of the urine, that they are physically perfect, for then they fully expect first-class policies.

Examination of the Urine.—Under ordinary circumstances the only examination required in regular routine by the majority of life-insurance companies is the determination of the specific gravity, the reaction, and the presence or absence of albumin and of sugar. Some companies even omit the examination for sugar unless the specific gravity is suspiciously high. Microscopical examination is required variously by the different companies in ordinary routine, the requirement being determined either by the consideration of age of the subject or amount of insurance on the life. Such an examination, however, is ordinarily expected when from conditions peculiar to the case, such as the finding of albumin or of a sediment in the urine, it would naturally suggest itself.

Urinary examination other than the foregoing is at the discretion of the examiner or at the call of the insurance company, according to the circumstances of the case.

Methods, in the examination of urine for life insurance, are, of course, the same as in a corresponding examination for clinical inquiries, and for them the reader is referred to the article on *Urine*. The only special point in the ordinary routine examination for life insurance is that by the conditions of such examination the examiner is not expected to examine other than the sample of urine procurable at the time of examination. It would, of course, be desirable to examine from the collected urine of a day's voiding, but such procedure is ordinarily impracticable.

The urine should be obtained in a small wide-mouthed bottle, and it should be passed in every instance, if possible, in the presence of the examiner. An ingenious precaution against the mixing of specimens may be found in the use of bottles with ground glass fronts. The name may then be written on each bottle. Fraudulent substitution is possible, especially by women, owing to the privacy demanded in their case. The examiner should be suspicious of every individual, and if he cannot have the urine voided in his presence, he should endeavor in other ways to be certain that it has been passed by the applicant. He should grasp the bottle when handed to him in order to determine by the warmth whether it is fresh or not.

As the next step, he should note the color of the urine. In health this varies from a pale straw to a deep amber. It may be altered by the presence of bile or blood or by the ingestion of certain drugs as rhubarb, creosote, turpentine, etc. The urine of hysterical persons is pale. It is also light-colored in diabetes and after the ingestion of large quantities of water or beer. Various substances may give the freshly voided urine a turbid appearance. Among them may be mentioned mucus and epithelia, earthy phosphates of calcium and magnesium, the urates of calcium, magnesium, sodium, and potassium, and, finally, blood or pus. When urine has been allowed to stand for a certain length of time, it is apt to become turbid through the decomposition caused by bacteria. The phosphates, if amorphous, may be dissolved by the addition of nitric or acetic acid after the application of heat; but the heat may at first increase the opacity. Heat alone dissolves the urates. If the urine remains opaque after the application of heat and the addition of nitric acid, this fact indicates the presence of albumin and the microscope must be resorted to in order to determine the exact cause.

The specific gravity of normal urine varies from 1.015 to 1.025. The urinometer may be used with advantage after the analysis rather than before, so that the examiner may not in any wise be influenced by its reading. The specific gravity is increased in diabetes mellitus, in the first stage of acute fevers and of nephritis, and when blood is in the urine. It is decreased in chronic nephritis and in hysteria. In some instances I have found sugar in urine of which the specific gravity was as low as 1.010.

When first voided the urine of healthy persons is slightly acid. After it has stood for several hours, especially in warm or stormy weather, fermentation is likely to take place, thus rendering it unfit for examination. The odor is then ammoniacal, and the appearance is turbid. Filtration should be practised in every case of turbid urine to aid in rendering it clear; filtered urine should never, however, be saved for microscopical examination.

To determine the presence of the abnormal constituents, albumin and sugar, many methods have been devised. A few of the most simple and satisfactory are herewith described.

Albumin.—For the detection of albumin in urines of 1.015 specific gravity, or lower, the heat and acid test is the best. This may be performed as follows: Fill a small test tube one-half with clear urine, heat the upper one-third until it boils. If turbidity results, it is due to the presence of either earthy phosphates or albumin. If it is due to the former, it will disappear on the addition of a few drops of acetic or nitric acid. If, however, the turbidity does not disappear, but increases on the addition of acid, it denotes the presence of albumin. In urines of specific gravity of 1.015 or over the Heller or contact test will be found the most satisfactory. The method is as follows: Pour a small quantity of pure, colorless nitric acid into a small test tube, incline the tube and allow the urine to run slowly from a pipette (with a rubber bulb at one end) down on the acid, the urine overlying the acid. If albumin be present, there will appear at the line of contact a white band or zone. There may appear a zone of haziness, not at the point of contact, but higher, in the urine. This is composed either of mixed urates or of crystals of urea nitrate, which are dissipated by the application of heat to the urine; or it may consist of mucus, which is not affected by the application of heat. Resins ingested will produce a peculiar, dirty yellowish zone at the line of contact. This has none of the appearances of albumin and is dissolved by the addition of pure alcohol.

Sugar.—The two tests used for determining the pres-

ence of glucose are Fehling's and the phenyl hydrazin. Fehling's solution is prepared by dissolving 34.65 gm. pure crystallized sulphate of copper in 200 gm. distilled water; 173 gm. chemically pure crystallized neutral sodic tartrate are then dissolved in 480 gm. solution of caustic soda of specific gravity 1.14, and into this basic solution the copper solution is poured, a little at a time. The clear mixed fluid is diluted to 1,000 c.c., or the cupric sulphate may be dissolved in 500 c.c., the tartrate salt and potash solution being diluted to 500 c.c.; and then the two solutions are to be kept in separate bottles to be used when a test is desired. The test is made as follows: Take 1 c.c. Fehling's solution, boil; if the solution remains clear add, drop by drop, urine from a pipette and heat; if sugar is present, a yellowish precipitate of copper suboxide will be thrown down, changing to a reddish-brown. Care must be taken not to mistake the flocculent deposit of earthy phosphates for the suboxide. Uric acid, when concentrated, gives a reaction somewhat similar to that of the earthy phosphates. These, however, have none of the characteristics of the suboxide reaction. The phenyl hydrazin test is somewhat more complicated and therefore not so well adapted for the present purposes. For a detailed account of this test the reader is referred to the article on *Urine*.

Microscopic Examination of Urinary Sediments.—When albumin is found in the urine the examiner must determine, by the microscope alone, the cause, as, in the classification of applicants, the albumininuria of nephritis, the pathological albuminuria, must be differentiated from the functional, accidental, or spurious albuminuria. The latter is due in many instances to the presence of semen, of blood, or of pus in the urine. Pathological albumin may be said to be due to (1) disturbances in the circulation; (2) changes in the composition of blood; (3) changes in the epithelia of the kidney. That the differentiation is important may readily be seen in the injustice which results from assigning to a simple or chronic cystitis (non-tuberculous), urethritis, etc., the same degree of objectionableness as to some form of actual renal disease. Examiners for life insurance companies, and especially those who live in the larger cities, would find it advantageous to possess a centrifuge, as haste is demanded in finishing and reporting cases. This is not the proper place for a discussion of the data by means of which this differentiation can be made. The reader will have to obtain this information in part from the article on the urine, and in part from the various articles which treat of diseases of the kidney, ureter, and bladder.

Abbott Smith Payn.

LIGATURES. See *Dressings, Surgical*.

LIGHT, THERAPEUTIC USES OF. See *Roentgen Ray, The Use of*.

LIGNOSULFIT is a brown liquid obtained as a by-product in Kellner's method of manufacturing cellulose. It consists of sulphurous acid and aromatic compounds which Simon says are those of the fir. For use in tuberculosis, a ten-per-cent. aqueous solution is allowed to saturate the air of a room in which the patient remains for from one to two hours a day. Simon reports decided improvement in the comfort of the patient and in the pulmonary signs. *W. A. Bastedo.*

LILY OF THE VALLEY.—CONVALLARIA. "The rhizome and roots of *Convallaria majalis* L. (fam. *Liliaceæ*)" (U. S. P.). This familiar and favorite little flowering plant, a native of many parts of the northern hemisphere, and everywhere cultivated, has been on the list of medicines and in the pharmacopœias for generations, but had become about obsolete until a few years ago, when its diuretic power and its influence over the heart suggested its employment as a substitute for digitalis. Its flowers and rhizomes have both been used, and possess similar properties, but practice is now almost entirely confined to the latter, which is thus described by the Pharmacopœia: "Of horizontal growth and somewhat branched, about 3 mm. thick, cylindrical, wrinkled, whitish, marked with few circular scars; at the annulate joint with about eight or ten long, thin roots, fracture somewhat fibrous, white; odor peculiar, pleasant; taste sweetish, bitter, and somewhat acrid."

The peculiar constituents of lily of the valley are *convallarin*, a purging crystalline substance, and *convallamarin*, a bitter, half-crystalline whitish powder; both are glucosides, the former decomposing into convallaretin, and the latter into convallamaretin. Convallamarin is a rather active poison of the digitalis character, in small doses increasing the urine and strengthening the heart's action. Although less reliable and useful in cardiac weakness than digitalis, it is still worth remembering when that drug acts unkindly, or when, after taking it for a long time, it is desirable to change for a while.

Convallaria may be given in substance. Dose, about 1 gm. (gr. xv.), or one may prescribe, as is more commonly done, the same number of minims of the official fluid extract. The conditions which indicate the use of this remedy are the same as those which call for the employment of digitalis. *W. P. Bolles.*

LILY, WATER. See *Nympheaceæ*.

LIMBS, ARTIFICIAL.—Artificial limbs are designed to take the place of the natural members when the latter are lacking either from congenital defect, or from surgical operation, or from traumatism. Deformities are corrected, and to some extent function is restored, by these appliances.

Lower Extremity.—The making of artificial limbs is a comparatively modern industry. Prior to the sixteenth century any one so unfortunate as to lose a limb had to depend upon the services of some ingenious friend or mechanic (carpenter or blacksmith) for such substitute as could be obtained. The productions of this period were for locomotion only, and made no pretence to conceal the loss of the limb. From this time to the end of the eighteenth century little progress was made; although in the writings of the celebrated Ambroise Paré (1509 to 1590) we find mention of an elaborate and ingenious leg, with joints at both knee and ankle; and, about a century later, the Dutch surgeon Verduin constructed an artificial leg for an amputation below the knee. This appliance consisted of a wooden foot connected by strips of steel to a copper socket lined with leather; this socket received the stump, and the weight of the body was supported, not on the flexed knee, but by lateral pressure on the stump and thigh. The productions of a Paré and a Verduin were for the few, not for the masses; and were heavy, intricate, and clumsy compared with modern appliances. At the beginning of the last century an impetus was given to the construction of artificial limbs by the Napoleonic wars; whatever claims to glory Napoleon may have, he certainly made many cripples and should be hailed as the patron saint of prosthetists. In the battle of Waterloo, the Earl of Uxbridge (afterwards Marquis of Anglesey) lost a leg, and a wooden one was made for him by Pott. This was the famous "Anglesey leg" which for a long time represented the highest prosthetic art, and was the pattern for many that followed; it was subsequently modified by Selpho and Palmer, and as such may be regarded as the "leg" on which the American prosthetic industry stands. The Anglesey leg consisted of a bucket or socket of wood to receive the stump, a steel joint for the knee, and a wooden joint for the ankle; this latter was moved by a spiral spring anteriorly, and by catgut cords posteriorly.

The Civil War may be taken as the starting-point of the modern prosthetic industry. The countless mutilations suffered at this time, and the liberality of the United States Government in providing the sufferers with artificial limbs, have brought out the ingenuity of several American prosthetists, and it is no exaggeration to say that in this branch of industry the Americans lead the world. But peace and the arts of civilization, such as the steam engine, the electric motor, the factory and agricultural implements continue to manufacture cripples quite as rapidly as war ever did.

To give an account of every improvement and peculiarity claimed by the various manufacturers of artificial limbs in this country would be to fill many pages with reprints from their catalogues; the space at the writer's disposal will allow only a brief mention of some of the chief features with which he is acquainted; there may be others just as good, and better. The Anglesey leg is practically the model from which all subsequent attempts are derived. It was introduced into America by Selpho, who, later on, improved it by making the knee-joint of two broad steel plates, the upper one convex, the lower concave and covered with leather; it had india-rubber buffers to prevent concussion at the ankle joint. The Palmer leg had an excentric hinge at the knee to prevent sudden flexion, and wooden joints with spiral springs to straighten them after flexion. Dr. Bly further modified the "Anglesey leg" by making the ankle-joint without bolts or ordinary hinge; in their place he used a ball of glass or ivory which was inserted in a bed of rubber and by this means lateral as well as antero-posterior motion was obtained.

The ankle-joint is the *crux* with most manufacturers; here we find most variety, and here too are the strong and weak points of the various limbs. The "Marks" leg has no ankle-joint at all, and a foot of rubber with a wooden core. The "Frees" limbs, on the other hand, by means of an ingenious double joint at the ankle (duplex ankle joint), give both lateral and antero-posterior motion at that joint. Between these two extremes of universal motion and no joint at all there are many with antero-posterior motion only; and each variety has excellencies claimed for it. The "Doerflinger" leg has a steel-bearing rocker-plate ankle-joint without cords, and also a foot of felt. In Fuller's "walkeasy" leg there are ball-bearing knee-joints for amputation below the knee, and sponge rubber foot with articulated ankle-joint; Fuller furnishes three varieties of ankle-joint, as well as a sponge rubber foot with rigid ankle. The adjustable double slip socket of the "Winkley Artificial Limb Company" is designed to secure an artificial leg that does not chafe, rub, or pull on the end of the stump, or irritate or make sore the place of bearing. The "Chicago Artificial Limb Company" makes a leg with a ball-bearing ankle-joint, and a felt foot, which is lighter than wood or rubber, also an aluminum limb. Which of all these varieties of legs and ankle-joints is the best, we cannot undertake to decide.

The first real *artificial foot* was made about one hundred and fifty years ago by Ravatau. "This apparatus was intended for a dragoon whose right foot had been amputated above the ankle. The whole mechanism consisted of a boot which reached above the knee, where it could be fastened with leather straps; the boot was laced its entire length. In its interior a metal strip extended on each side from top to bottom, and at the end was attached to a hollow metal cylinder, which was intended to replace the missing ankle-joint. The boot had a metal sole. Inside of the cylinder was a coiled spring, with convolutions like a snail shell, forming a contour of the foot. Thus an elasticity was imparted in walking. The empty spaces in the inside of the boot were filled with horsehair. The dragoon by means of this contrivance was able to serve many years in the army." (*Scientific American*, Supplement, No. 1374.)

The Foot has presented grave difficulties to the prosthetists, who are almost unanimous in condemning the various foot amputations as being unsatisfactory from the point of view of their art. After Chopart's, Lisfranc's, and Hey's operations, as the extensor tendons have been divided, the heel is apt to be drawn up by the tendo Achillis. Of all the foot amputations Syme's presents the best possibilities to the makers of artificial limbs.

In the case of children, it is a most mistaken policy to wait till they have finished growing before supplying them with an artificial leg. Such a course of delay, as is often adopted, makes the child grow up round-shouldered and one-sided; and, to say nothing of the appearance, a properly fitting apparatus is more healthful. Self-lengthening limbs or extension apparatus can be procured from most makers; the "Chicago Artificial Limb Company" furnishes a self-lengthening limb, perfectly adjustable, and capable of being lengthened by the purchaser.

Upper Extremities.—Previous to the last century we find little mention of artificial arms and hands. We read of an iron arm made for a captain in the sixteenth century, and an iron hand weighing about three pounds with fingers that could be flexed by the other hand, and extended by pressing a knob on the side of the hand. But most of these early hands and arms were designed to enable the wearer to hold a sword or shield, or to handle the reins. A monk and a locksmith figure in the early manufacture of artificial hands, but their productions have only a historic interest. The first really useful hand was devised by Pierre Ballif, a dentist of Berlin, nearly a hundred years ago; most of the modern hands being simple modifications. As the need for artificial hands and arms is more urgent than is that for lower extremities, so the manufacture of the same seems more difficult; some prosthetists do not supply them at all, and some others supply them but do not make them. Artificial hands of delicate workmanship will enable a patient to write, use a knife and fork, raise and lift a glass, or shake hands; but where strength is required, as for laborers and mechanics, it is better to have a solid stock into which can be inserted the various implements required. Almost any tool or agricultural implement can be used efficiently; in some cases they are inserted into the hand, and in others they take the place of the hand. The attachments are generally by means of a screw or the "bayonet lock."

An artificial limb should be applied as soon as possible; that is, as soon as the wound is healed, and there is a good healthy stump. When amputation has been performed for disease a longer delay will be necessary than when traumatism has been the cause of the mutilation. As soon as healing is complete and there is no longer any tenderness, the stump should be prepared by daily bathing and massage, followed by bandaging. This will give a firm stump without superfluous adipose tissue. Joints should receive passive motion, not only to prevent ankylosis, but also lest the muscles by contracting should limit motion. In case of delay the stump is apt to become flabby and enlarged, and while in that condition is totally unfit for the application of an artificial limb. Ordinarily a limb can be applied in from one to three months.

With regard to the stump most suitable for the application of artificial limbs it may be said that, while the general rule in amputation has been to save all that is possible, this should be interpreted somewhat laxly with regard to the lower extremity. In the upper extremity any, even the smallest remaining, part of a hand is far more useful than any artificial appliance; but in the lower extremity the loss of an extra inch or two is of no moment compared with a serviceable stump. An artificial arm applied to the shoulder, and artificial fingers, have merely a cosmetic effect, and cannot be of much service. An artificial arm of considerable utility can be applied to a stump when the amputation has been made anywhere between the upper third of the humerus and the wrist. In the lower extremity, amputations at the hip do not allow of the application of a limb that can be of much use. In thigh amputations, a serviceable stump can be obtained anywhere between a point within five inches of the hip to one situated within about three inches from the knee. Amputations within three inches of the knee, either above or below the joint, should (from the prosthetist's point of view) be avoided.

Whenever possible the patient should be measured for and fitted with the artificial limb by the manufacturer. It is true that many makers are willing to have the physician or even the patient or some lay friend take the measurement, and they will send full directions for the purpose; but every effort should be made to have the

manufacturer himself assume this responsible task. An artificial limb is not a luxury, to be indulged in for a short time, but is meant to be a daily companion for many years, and if it is not comfortable and does not fit properly, it will never be of much use. To the writer it seems as rational to order an artificial limb from one's own measurements, as it would be to order a set of artificial teeth in the same manner; doubtless it *could* be done, but fortunately there are other and better ways.

In choosing an artificial limb, bear in mind the requirements of the patient; the weight and construction of the limb are more important than the price. As a rule, the simpler the apparatus the greater its utility. A complex piece of mechanism which cannot be got at without taking to pieces the whole limb, and which is liable to be constantly in need of attention, adds considerably to the cost, and in the case of a laborer keeps him from his work. Generally, it will be found best to obtain the catalogues of various makers in the vicinity, and, on selecting one, to be guided largely by his opinion. A reputable maker cannot afford to supply a poor limb, and as a rule he knows a great deal more about the matter than the average physician.

There is no reasonable limit to the possibilities of an artificial leg. Not only do patients stand, walk, and run on it, as well as attend to their daily avocations, but many also dance, skate, and ride a bicycle with apparently as much ease as before they were crippled. Without indorsing the glowing descriptions put forth by some makers, which almost make one think that their productions are vast improvements on the natural limbs, one cannot but recognize the truth of the following: "It is of no small advantage nowadays both to surgeon and to patients to realize that the loss of a limb is not necessarily a disfiguring or mutilating affair, but that very frequently an artificial limb well fitted will be of vastly more service and less trouble and annoyance than a member already crippled by disease, or left in a condition where life even is thereby threatened. In other words, the art of the instrument maker has done very much to assist the surgeon, and to make patients willing to undergo serious operations who otherwise would be very loath to lose so useful a part of their bodies as one or more limbs. It has done much also to atone for the horrible injuries and mutilations inflicted by railway and other accidents" (Truax, in "Johnson's Encyclopædia," 1894, v., 270).

The *weight* of an artificial limb is a matter of some importance. Legs vary from two or three pounds to seven or eight pounds. It is a mistake to buy one that is too light. One must bear in mind the weight, occupation, age, sex, and stature of the patient. Other things being equal, a heavy leg lasts longer than a light one. Some patients prefer a fairly heavy limb, others a lighter one. As a rule, it is well to have a leg sufficiently heavy to bear *more* than any strain that is likely to be put upon it. Beyond this we would have the leg as light as possible. It must be noted that it is the weight of the *foot* which makes an apparently heavy limb.

The *cost* of an artificial limb varies according to the maker and the length of the limb. The present market price of a first-class leg, thigh amputation, is from $80 to $125; below the knee, about $35 to $75; foot, $30 to $50; arm and hand, above the elbow, $50 to $100; below the elbow, $40 to $75. These figures vary little if at all from those given in the former edition of the REFERENCE HANDBOOK; in reality they are cheaper, as the limbs of to-day are superior to those of a decade and a half ago.

Durability of artificial limbs. This, too, is variable. Some will last fifteen years or even longer, others, by the same maker, only three or four years; the difference depending mainly on the amount of care and attention bestowed upon the limb; much, too, depends on the habits and occupation of the wearer. From five to seven years may be taken as the average "life" of an artificial leg; an arm lasts ordinarily about twice as long. Alterations in the stump often necessitate, if not a new limb, some modification in the socket. Many limbs are cast aside, not because they are worn out but because the wearer wishes for a new one. The United States Government, with marked generosity, supplies its pensioners with new limbs every three years.

In giving a list of some of the manufacturers of artificial limbs we would borrow the cautious words of the writer on this subject in the former edition of the REFERENCE HANDBOOK: "The following list is given with some hesitation as it is of course only a partial one, and the writer does not wish to imply that there may not be better manufacturers in the country than these. But general practitioners have usually so slight a knowledge of this branch of industry that the following names of well-known and reputable manufacturers are given for their convenience": C. A. Frees, 853 Broadway, New York, and 106 Fifth Avenue, Chicago; A. A. Marks, 701 Broadway, New York; Daly & Co., Bible House, New York City; Sharp & Smith, 92 Wabash Avenue, Chicago; George R. Fuller Co., Rochester, N. Y.; The Doerflinger Artificial Limb Co., Milwaukee, Wis.; J. E. Hanger, 207 4½ Street, N. W., Washington, D. C.; The Chicago Artificial Limb Co., San Francisco, Cal.; William T. Simpson (successor to James A. Foster), Detroit, Mich.; The Duluth Artificial Limb Co., Duluth, Minn.; The Winkley Artificial Limb Co., Minneapolis, Minn.

R. J. E. Scott.

LIMPING, DIAGNOSTIC SIGNIFICANCE OF.—Among the first signs of hip disease is limping, which, in the early stage, may disappear entirely to return after an interval of days or weeks; it is present sometimes in the morning when the patient leaves his bed, and "wears off" after a brief period of activity; it breaks up the natural rhythm of walking in which equal time is given to the two feet. When he limps the patient leaves the well foot longer on the floor than the affected foot. He makes the well one give a more accented stroke as it hastens to relieve the affected limb from the weight of the body. The well limb hurries forward to take the blow of the descending body, and thus destroys the natural rhythm in which the two feet move alike and in equal time. The simplicity of the normal rhythm makes a slight deviation from it very noticeable, so that limping always receives early recognition and attention. But in the absence of all other signs and symptoms it may not be easy to say which foot is the affected one, a question which may be answered by noticing which foot strikes the floor the hardest and quickest blow in walking. The foot which does this is the well one. The patient unconsciously hastens the action of this foot in order to relieve the affected one from the blow of the weight of the body which accompanies walking. The rhythm of human locomotion has not received the attention to which it is entitled. Normal rhythm may be expressed as follows: One—two—one—two—one—two, and false rhythm thus: One—two——one—two——one—two.

Limping may be described as asymmetrical walking. In ordinary cases it depends less on a difference in the length of the limbs and on their deformed relation to the trunk than it does on a failure of the two limbs to make steps of equal length and in equal time. And much of the lameness which we see is preventable by learning to keep correct time in the motion of the feet. A perfectly well person can walk lame by simply giving more time to one foot than to the other, which may be demonstrated at once if the reader of this will lay down the book and walk across his room, violating in his steps the natural rhythm in which time is equally marked and letting one foot linger on the floor longer than the other at each step. And conversely, one who is really lame can lessen the appearance of being so by learning to observe the natural (one—two—one—two—one—two) rhythm of human locomotion. This precept has proved of especial value in hip disease.

Adoniram B. Judson.

LINDEN FLOWERS.—*Lime Flowers. Tilia Flowers.* The flowers of several species of *Tilia* (fam. *Tiliaceæ*). This article, though still extensively employed among