NEW AND REVISED EDITION.

NOVELLO'S

MUSIC PRIMERS AND EDUCATIONAL SERIES.

THE ORGAN

BY

JOHN STAINER

EDITED BY JOHN E. WEST.

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EDITOR'S PREFACE.

An important feature of the present Edition of this invaluable and popular Organ Primer is the adoption of the now universally recognized system of fingering—1.2.3.4.5., which is here substituted for the older system—×.1.2.3.4.—in all cases where fingering is marked.

In the explanatory portion of the book, opportunity has been taken of briefly mentioning one or two of the principal additions and improvements to the instrument which have been made since the book was first issued.

Bearing in mind that the Author's aim was to assist, in as concise a manner as possible, the *early steps* of an organ student, the Editor has refrained from adding any further exercises or pieces to those which were already given. But the addition of a few extra fingering and phrasing marks seemed necessary here and there, and, in the five concluding pieces, the laying-out of one or two of the manual passages has been rendered clearer to the player's eye by means of a slight re-staving.

The admirable explanations and diagrams of the Tubular-Pneumatic and Electric actions have been supplied by Mr. L. Simon, of Messrs. Norman & Beard, Ltd.

PREFACE

TO THE ORIGINAL EDITION.

THERE are two ways in which time may be devoted to the practice of a musical instrument. The first and most common is, to avoid the difficulties which present themselves and to be content with mastering just so much of the art of playing as will afford a little amusement; the other is, to face at once the special difficulties of the instrument and persevere until they are surmounted. By the former, a player cannot possibly rise above a very mediocre standard, and his performance will never receive higher praise than that of being called tolerable; but by the latter, the highest excellence will be within reach, and the student will only be limited in its attainment by the amount of natural talents with which he may be endowed.

Perhaps no instrument offers such a temptation to triflers as the Organ, for the obvious reason that an immense variety of tone can be produced on it by merely mechanical means. Hence it is of the utmost importance that the student should take his first steps in the right direction. The Author has endeavoured to place the true principles of organ-playing before the beginner, and he hopes he has done so in a manner not uninteresting or discouraging.

He takes this opportunity of acknowledging his obligations to the eminent organ-builder, Mr. Henry Willis, for much valuable assistance.

CONTENTS.

INDEX.

THE ORGAN.

PART I.

SHORT SKETCH OF THE HISTORY OF THE ORGAN.

ANCIENT FLUTES.

1. THE history of the organ is nothing more than a narrative of the efforts made by men to bring under the control of one performer a large number of the instruments called flutes.

2. The particular sort of pipe or flute the use of which led eventually to the construction of an organ, was the *flûte à bec* or *beak-flute;* that is to say, a pipe with a mouthpiece which was placed against the lips for the purpose of receiving the breath of the player.

3. A penny whistle (tin or wood) is probably a very familiar instrument to our readers, and is a veritable specimen of a *flûte à bec*. The now almost obsolete *flageolet* is also of the same family

How little difference there is between a penny whistle and an organ-pipe can be seen by the accompanying illustrations :—

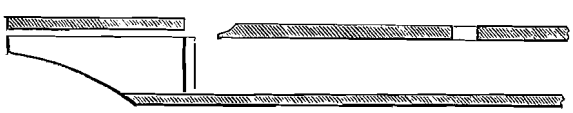

FIG. 1.

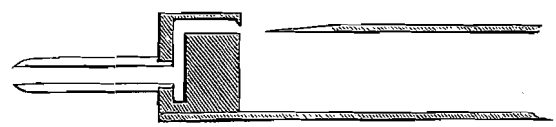

FIG. 2.

When a flute was so constructed that it was blown at a hole in the side, like our modern orchestral instrument or ordinary flute, it was termed a *flauto traverso* or "flute held sideways." (Fig. 3.)

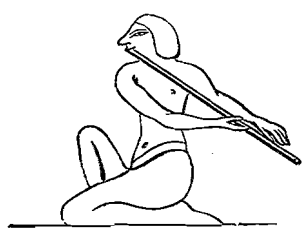

FIG. 3.

It would, of course, not be possible for a performer to play more than one *flauto traverso* at a time; all the efforts of musicians were therefore concentrated on bringing several *flûtes à bec* under control.

4. It was soon found that *two* such instruments could easily be played by one person. This seems to have been known to almost all ancient nations. The figure below is from an Egyptian monument.

FIG. 4.

The old-fashioned "double flageolet" is a real ancient "double flute," although the tubes are, for convenience' sake, brought closer together than was the case in the older instruments. The pretty effect of the two-part harmony of the "double flute" urged men on towards the construction of an organ.

FLUTES ON A BOX OF WIND.

5. The next step in organ-building was to place several flutes on end over a *box of wind*, supplied not by human lungs, but by *bellows*. This is well illustrated by a figure copied from Kircher's "Musurgia."

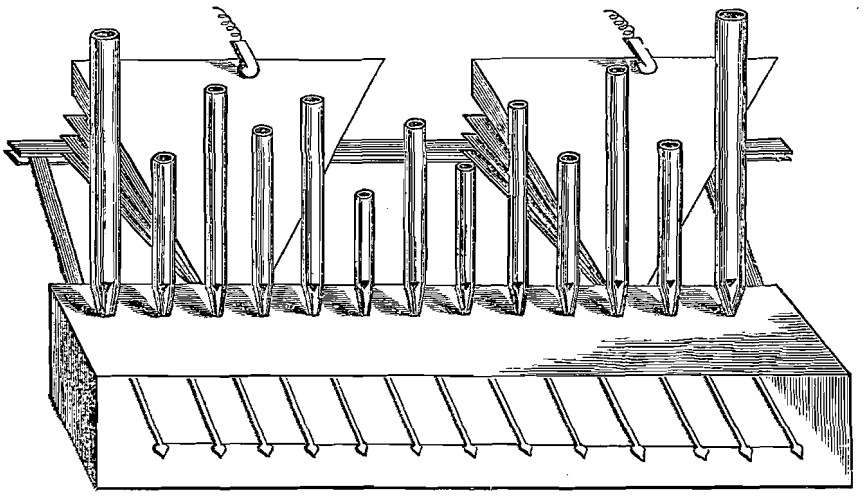

FIG. 5.

The pipes in the above instrument (Fig. 5) were made to speak or be silent at the will of the player, by pulling backwards or forwards pieces of wood, the ends of which either closed up the foot of a pipe or allowed the wind to enter it.

6. As the number of pipes increased, the number of blowers necessarily became larger. The following illustration from a Saxon Psalter exhibits this :—

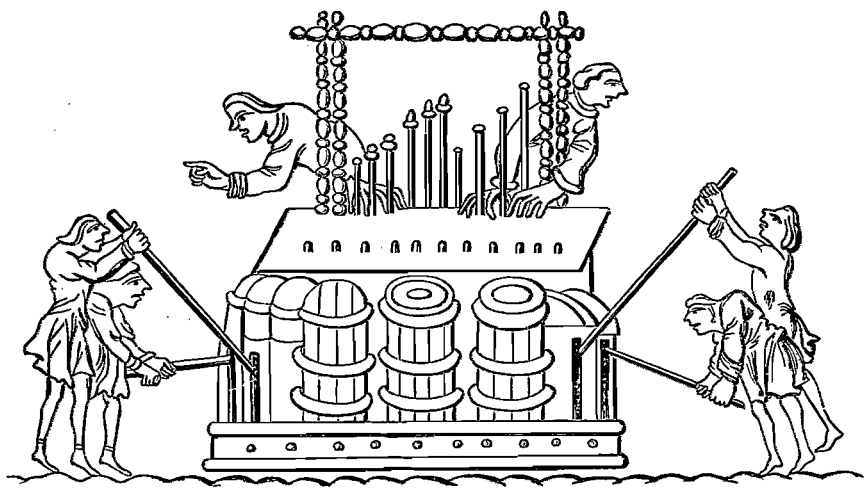

Fig. 6.

7. Bellows in those times were of very primitive form, in fact not in any way superior to a common blacksmith's bellows as used to this day in the forge.

Men soon discovered that the weight of the body might with advantage relieve the muscles of the arm of the laborious duty of constant pumping. They constructed bellows of such form that men could stand on them. The following was found on the Theodosian Obelisk at Constantinople :—

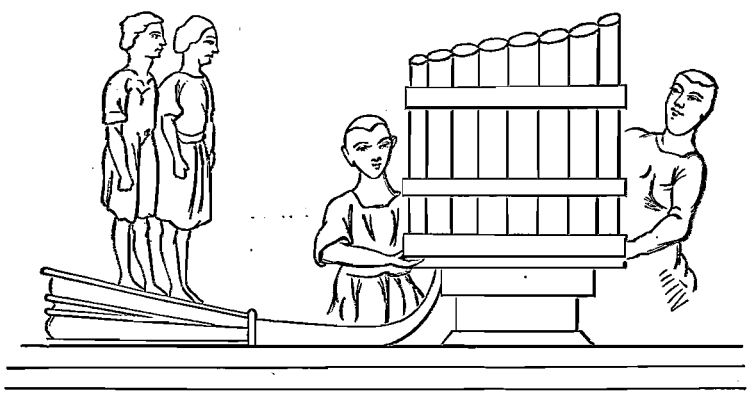

Fig. 7.

Hence, the blower was often called the " bellows-treader " (*Balgentreter*). This system of blowing has lasted up to the present time, and those who have any curiosity on this subject will still find in many Continental churches, in some dark corner, a man busily engaged in mounting on first one and then another of several sets of feeders, and forcing the air into the bellows by his weight, as if he were undergoing punishment at a musical tread-mill.

REED AND FLUTE PIPES.

8. The flutes hitherto spoken of have been those in which the tone is produced by forcing air against a sharp edge of wood or metal called the "lip," and by this means setting the column of air inside into vibration. But the word "flute" or "pipe" anciently included a pipe of very different construction, namely, a *reed-pipe*—that is, a pipe in which a tongue of metal or wood is so placed that, as air is blown into the tube, the tongue, partly barring its passage, beats backwards and forwards, and by its vibration sets the column of air inside the tube into synchronous vibration. The examination of an oboe or bassoon will make the action of a reed quite clear. Thus it has come to pass that to this day these two classes of "flutes" or pipes are found in organs; those corresponding to the common whistle family being called *flue*-pipes, while those of the oboe type are called *reed*-pipes.

KEYS FOR THE HANDS.

9. The next step in organ-making was the invention of the *clavier* or *key-board*, about the close of the eleventh century. At first keys were of the most clumsy description (Fig. 8), so large and broad that nothing short of a blow from the clenched fist could act upon the leverage. Hence in these early times the player was called an organ-beater (*pulsator organorum*). It is recorded that the interval of a fifth occupied about the same space as an octave in our modern instruments.

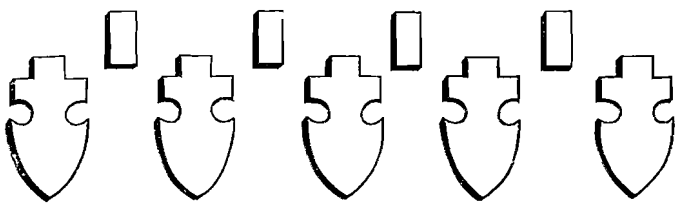

FIG. 8.

10. Then little by little the keys were improved in shape until they became much like our modern keys, the only difference between them being that the old sets were much shorter (from back to front), and the sharp keys were *white* and the natural keys were *black*, the reverse of our modern colours.

KEYS FOR THE FEET.

11. The invention of pedals or keys for the feet, early in the fifteenth century, was probably the most important step ever made in organ-building. It is unnecessary to say here how grand and thrilling is the effect of the tone of those enormous pipes thus placed under the command of the performer, or how the independent use of the pedals gives the organist a source of harmony not possessed by any other instrument.

Pedal-keys seem to have been very quickly brought to a considerable degree of perfection in Germany where their compass soon reached or even exceeded two octaves. But in England the introduction of pedal-boards of full compass was extremely tardy; indeed it may be said not to have commenced until fifty years ago.*

SLIDERS.

12. When only one row of pipes was placed over the box of wind the mechanism of an organ was simple enough, because each key pulled down a sort of pallet or piece of wood covered with leather placed under the foot of each pipe. As long as the key was held *down* the air rushed through the hole into the pipe and made it speak, but as soon as the key was allowed to return to its position the pallet returned by means of a spring to *its* place below the pipe and shut off the supply of wind.

But it was discovered that if a thin slip of wood be placed (running from *right to left*) under the row of pipes, having perforations corresponding to the holes in which the pipes stand, the *whole row* of pipes could be made silent by shifting this sliding piece of wood either to the right or left so far that the perforations no longer corresponded

* These remarks were written in the year 1877.

with the holes in which the pipes stood. Even when the keys are pressed down no sound will be produced until this sliding-slip, or slider, is moved into such a position that its perforations are exactly under the feet of the pipes.

13. These sliders are now acted upon by levers called *stops*, and it is by their means that several rows of pipes of different qualities of tone, and also of pitch, can be placed over the same box of wind and yet be selected at will by the performer.

TWO OR MORE ROWS OF KEYS.

14. The admirable capabilities of the organ for supporting vocal music, and the solemn dignity of its character, have always led to its association with divine worship. But the broad and strong qualities of tone found useful for sustaining the voices of a large congregation were not found delicate enough for the accompaniment of a highly trained choir either when singing individually or in a body. Hence the construction of an independent organ of soft and delicate tone called the *Choir* Organ, the keys of which were placed either immediately above or below the louder organ, to which last was given the name Great Organ. The keys of the Choir Organ are more often below those of the Great Organ than above, and the pipes of the former are often, especially in cathedrals, placed on brackets projecting over the screen behind the player's back. In such cases the mechanism connecting the keys with the pallets and pipes had to pass below the organist's feet, under the pedal keys, and it was called in German a *Rückpositiv*.

Two sorts of small organs had been in public and private use, namely, the *Portative* or "portable organ," so called because it could be carried about in processions, and the *Positif* or "organ in position," so named in contradistinction, under the impression that it was *not* portable.

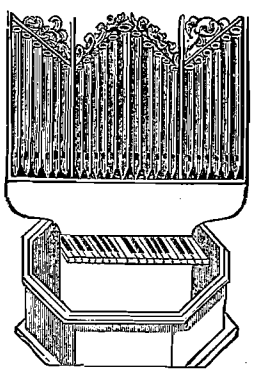

FIG. 9.—Positif Organ.

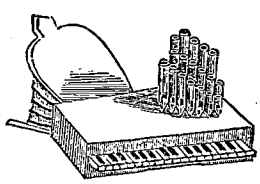

FIG. 10.—Portative Organ.

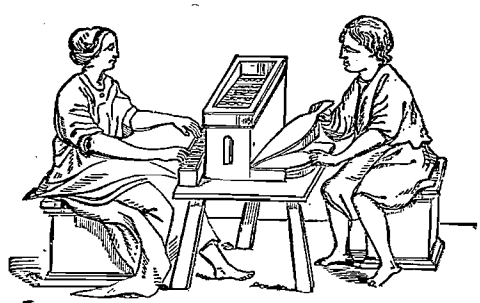

FIG. 11.—Portative Organ.

But, as a matter of fact, these *positifs* or "organs in position" were sufficiently portable to be moved from place to place with comparative ease, although they were really larger than the *portatives*.

Organ-builders found in these soft, sweet-toned *positifs* an excellent model for the organ required for choir accompaniment. Hence Choir Organs were not only built with the same sort of tone and of much the same dimensions as *positifs*, but were actually called *positifs*, a name which they bear to this day in France and Germany.

15. The "Echo Organ" was a small organ, often of limited compass, the pipes of which were shut up in a box and placed at a distance from the rest of the instrument. Echo Organs are sometimes made now. In most instruments their place is taken by the "Swell." The gradual alteration of an "Echo" into a "Swell" organ was, like many other vast improvements in organ-building, due to English workers. Abraham Jordan, in the year 1712, made the front of an echo-organ box to move up and down in grooves at the side like a window-sash. The mechanism for raising the front board or shutter was of a very unwieldy character, and the pedal which set it in motion offered great resistance to the foot. It also happened frequently, that on permitting the shutter to return to its place (by raising the pedal), this heavy panel of wood ran down with an unpleasantly loud bang.

This old form was called a "nag's-head" swell. But this method of obtaining a "swelling organ," as it was called, was in time superseded by a set of overlapping shutters known as the "Venetian" swell, so called because of its similarity to a common outdoor blind.

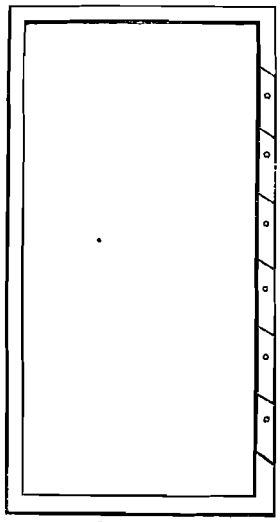

FIG. 12.

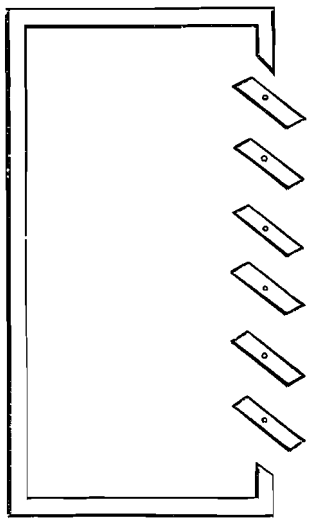

FIG. 13.

It is quite impossible to arrange an account of all the improvements in organ-building in chronological order. Progress and inventions overlapped each other, and very often the results of successful experiments were not generally known and utilised till long after their first discovery.

HORIZONTAL BELLOWS.

16. It is, however, quite certain that no great advance in the construction of the instrument was possible until the bellows were improved. This portion of the mechanism is of as vital importance to an organ as are lungs to a human being; as long therefore as no better means of supplying an organ with wind than the simple forge-bellows was known, progress was completely barred. The faults of such old bellows must be known to all. As the handle is pressed down and the bellows is made to fill, all the pressure which the top of the bellows exerted is negatived. If *one* such bellows supplied an organ, the player would be compelled to take his hands off the keys on each occasion on which it was being filled. If the reader cannot quite understand this account of defects of the old forge or "diagonal" bellows, he can easily make an experiment which will fully explain what has been said; let him take a common kitchen-fire bellows and insert the mouthpiece of a penny whistle into its orifice and bind both round with leather so that the air passing from the bellows must enter the whistle, and then let him ask a friend to blow while he plays tunes. The defects of diagonal bellows will no longer be doubted.

Nor were these faults remedied by having a large number of such bellows and then supplying the organ only from those which were full; because, when a bellows of this kind is full, the weight of the top and sides is spread over the whole atmospheric contents, but as the air becomes exhausted this weight remains equal while the contents grow less; the *pressure* of the outgoing air is therefore increased.

Two improvements made towards the close of the last century, by Green, remedied all these shortcomings. The old diagonal bellows was made into a feeder, and had another bellows placed over it, so that the two together formed a *feeder* and sort of *reservoir*. A peep at the bellows of a modern organ will show that the pressure of wind, for obvious reasons, does not vary with the movement of the feeder. The modern bellows are termed *horizontal* to distinguish them from their forerunners; and notwithstanding the fact that no "diagonal" bellows have for a considerable period been made in this country, organ-builders still promise that they will supply their customers with "horizontal" bellows.

One other improvement only was needed to make bellows perfect. It was necessary to remedy the defect before alluded to, namely, the inequality of the pressure as the top fell. This was ingeniously done by making one fold of the bellows turn *outwards* while the other turned *inwards*. This arrangement of the folds can be clearly seen in the next illustration.

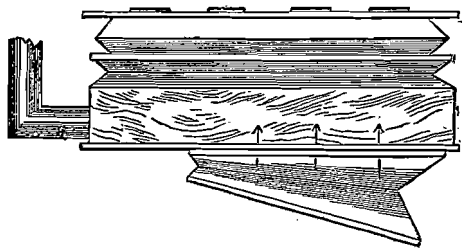

FIG. 14.

17. The *counter-balances* are pieces of iron attached to the upper, middle, and bottom boards of bellows for the purpose of making *a* and *b*, Fig. 15, open equally. Their use is a marked improvement in organ-construction.

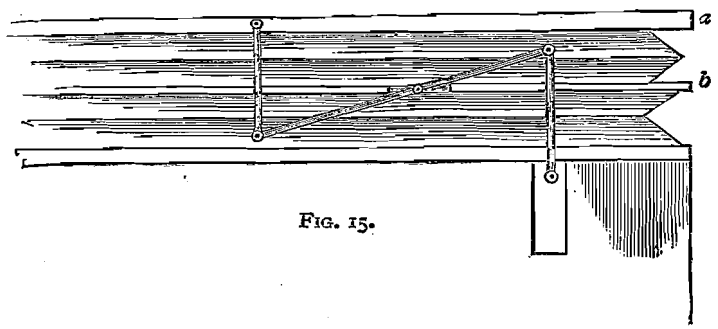

FIG. 15.

CONCUSSION BELLOWS.

18. In old organs it was found that the simultaneous sounding of several of the large pipes on the manuals caused a "jumpy" and unsteady effect—a sure sign that the equality of pressure was disturbed, first by the sudden demand on the resources of the wind-chest, next by the rush of air to take the place of that already used. The accompanying ingenious invention of Bishop, the organ-builder, about fifty years ago, entirely removed this. He placed a small single bellows (*a b*) against the wind-trunk near the sound-board, the outer side of which was balanced by a spring (*c*). When a sudden demand is made upon the wind and the pressure is consequently reduced, this spring (*c*) by proportionately forcing in the side of the bellows (*d*) counteracts the defect. These little bellows are called "concussion-bellows."

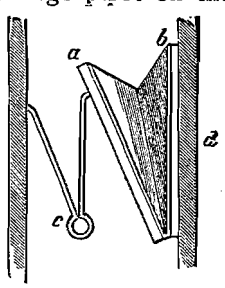

FIG. 16.

COMPOSITION PEDALS AND COMBINATION PISTONS.

19. The player had still to contend with the serious inconvenience of being compelled to make any alterations in the arrangement of the stops by drawing them in or out *with his hands*. A great boon was therefore conferred upon organists by the introduction of small iron pedals placed within easy reach of the feet, which by a system of leverage could draw out certain groups of stops. This method of changing stops has been vastly improved upon by Mr. Henry Willis, who, after many years of patient study, has perfected a system of "combination pistons." They are small round ivory or brass buttons placed on the flat strips of wood between the manuals. When pressed with the thumb or any available finger of the performer, these pistons act upon little bellows of compressed air which, as they expand, push groups of stops in or out by appropriate leverage. The convenience of this clever mechanical contrivance cannot be overrated.

The system of arranging sets of stops on different sound-boards and giving the organist little pedals, by the forcing down of which the air is cut off from the different sets of stops, is known as the "ventil system." Those who are best competent to judge of its worth are convinced that it is inferior both to "composition pedals" and "combination pistons," and it is to be regretted that in certain quarters an attempt is being made to re-introduce it under the false notion that because it is still in existence in some parts of the Continent it is therefore superior to the latest inventions of English builders.

PNEUMATIC LEVER.

20. Perhaps nothing tended to prevent the organ from being a popular or generally attractive instrument to students so much as the extreme weight or "stiffness" of the touch. For the remarkable invention which removed this disagreeable part of an organist's labour an Englishman also has to be credited. Mr. Barker, about the year 1832, made a small bellows for each manual key, so arranged and constructed that when a key was pressed down the compressed air raised the top of the bellows. To the top of this bellows was attached the weight of the whole action to the pallet. When the manual key was allowed to rise, the little bellows was emptied through a waste valve and fell into its position of rest. The fingers of organists have, therefore, in these days only to move the small pallet or valve which admits compressed air into the pneumatic bellows, and thus are able to throw on to these active little supporters the labour of working all those numerous portions of mechanism which reach up to the pallet in the wind-chest. One of the most important advantages of the pneumatic lever is that ciphering is much less frequent. This fact is thus accounted for: when no pneumatic lever is used the organ-builder strives to render his touch light by reducing the strength of his springs to a minimum; any change in the weather or other disturbing influence is liable therefore to make the springs unable to do their duty, and a cipher is the result. Whereas, when the pneumatic lever is attached to an organ, the builder, having no scruples as to the work he is giving to his compressed air, strengthens his springs and thus prevents accidents. The electric communication between manuals and pallets is receiving great attention from several builders who are striving to bring it to perfection.

TUBULAR-PNEUMATIC AND ELECTRO-PNEUMATIC ACTIONS.

Tubular-pneumatic action in its earliest form was used by Mr. Joseph Booth in the year 1827 for the lower pipes of the 8-ft. Great Open Diapason. These pipes were placed on a separate wind-chest, and the conveyances, instead of conveying wind to the pipe-feet, were used to actuate "puff-valves," which allowed the pipes to have a direct supply of wind.

In the year 1868 Mr. Henry Willis patented a tubular-pneumatic draw-stop action which was used by him in many large organs, and in 1871 he applied pneumatic action to the pedal organ at the Royal Albert Hall, wood grooves being used instead of tubes. One year later the organ at St. Paul's Cathedral was divided, and the Swell, Choir and Pedal organs with their draw-stops were played by this system.

Since that date many ingenious minds have worked out a great variety of tubular-pneumatic actions, and the illustrations on pages 23 and 24 show two of the most successful systems.

Electro-pneumatic action, as first used in England, was invented by Mr. C. S. Barker (inventor of the pneumatic lever) in 1868, and applied by Messrs. Bryceson Bros. to several organs in London and the provinces. Previously Dr. H. J. Gauntlett took out a patent for an electric action without the aid of pneumatics, but owing to the large amount of current required it was not generally used. In 1881 Mr. F. W. Schmolle patented a system by which a small low-volt magnet with a hinged armature actuated a primary pneumatic motor; and in 1885 Mr. James Walker exhibited in the Inventions Exhibition an organ on this principle. In 1890 Mr. Hope-Jones introduced a low-volt magnet with a detached armature and multiple seating, which has since been improved by Messrs. Norman & Beard, Ltd.

IMPROVEMENTS IN ORGAN-PIPES.

21. The variety of tone produced by modern organ-builders is extraordinary. The discovery by the French builders that organ-pipes, made twice their proper length and perforated with a small hole in the middle of the tube, produced a fine rich tone, has led to the universal adoption of "harmonic" stops as they are called; simultaneously with this a high pressure of wind has been applied to many important stops, both "reed" and "flue" (and especially to "harmonic" stops), thereby adding largely not only to the varieties of tone of which the instrument is capable, but also to the grandeur and sublimity of its full power.

22. Enough has been said to give the reader a fair notion of the progressive improvements in organ-building from the earliest time to the present day. There are those, however, who claim great antiquity not only for a simply constructed instrument but also for organs of a complicated structure. Thus the *magrepha*, though not mentioned in the Bible, is described in the Talmud as an organ with ten keys and ten pipes to each key, of very powerful tone, used in the Temple of Jerusalem.* Other authors assert that organs with four, six, or eight stops were in use before the Christian era.† But the word *organ* is so very generally applicable in its meaning of *an appliance* or *mechanical contrivance* that it cannot be a matter for surprise that it has, from time to time, been given to musical instruments differing from each other not only in capabilities but in structure. The word *organ* as used in the Bible for a translation of *ugab* or *huggab* must not be thought to imply any complicated or large instrument.‡

The expression a "pair of organs" found in old writers merely signifies a complete set of pipes, just as we still say "a pair of stairs," &c.

TREMULANT.

The Tremulant is probably of French origin; but it must have been known in England as early as 1606, as the organ built in that year by Dallam for King's College, Cambridge, possessed a "shaking stoppe." It is an apparatus for imparting to the sound of any portion of the organ to which it may be applied a waving or undulating effect, resembling the *vibrato* in singing or the *tremolando* on stringed instruments.

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* See Engel's "Music of the Most Ancient Nations." † See Chappell's "History of Music."
‡ See articles in Cassell's "Bible Educator."

PART II.

SHORT EXPLANATION OF THE CONSTRUCTION OF AN ORGAN.

23. Much as to the nature of the mechanical structure of an organ must have been gathered from the historical sketch just given, but the following concise account will perhaps place the whole more clearly before the reader.

The most important fact to be first grasped is that an organ with independent pedals and two or more manuals is simply *several* organs of almost identical structure brought together so as to be conveniently under the control of one performer.

If then the mechanism from the key to the pipes is once explained, the same explanation will apply equally to each row of keys and to the separate pedal organ.

FROM KEY TO PALLET.

24. Let us start from the manual-keys, looking at Fig. 17 at each step.

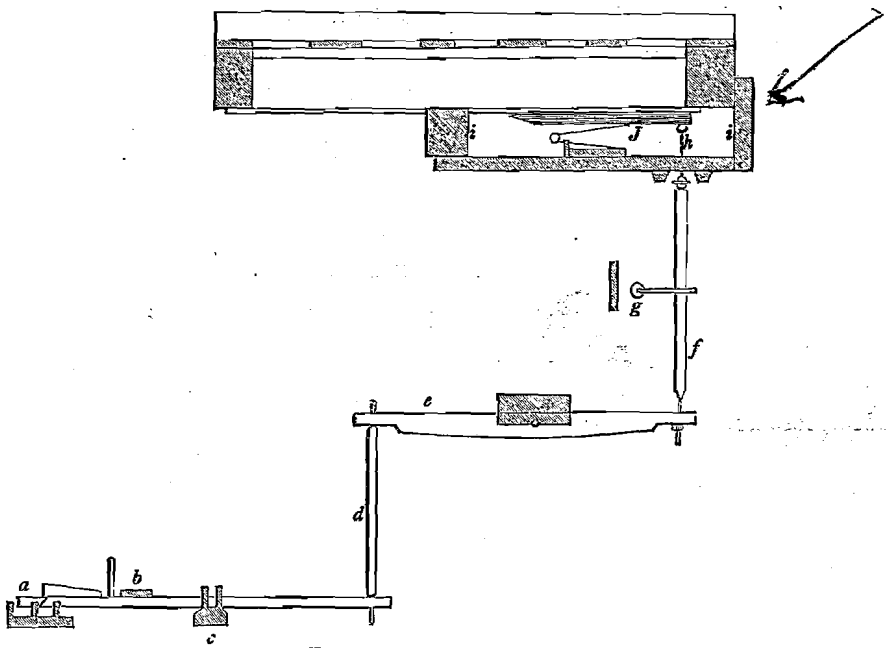


FIG 17.

A key is a lever, the front portion of which is exposed to view (*a*). Just behind the ornamental strip of wood forming a band between each manual is placed a weighted piece of wood lying on the whole length of keys from side to side, called the *thumping board* (*b*). Its duty is to keep the keys in position and resist any tendency they may have to rise unduly when released from pressure of the finger. Under the keys a series of pins are arranged on a piece of wood forming the *pin-rail* (*c*). These pins fit easily into holes in the keys and prevent them from oscillating when moving up and down. On the end of the key, and kept in position by a little pin running into a hole in the key, is the *sticker* (*d*). The upper end of the sticker has also a little pin which passes into the end of a horizontally placed lever called a *backfall* (*e*). At the other end of the backfall is a hole through which passes the lower end of a *tracker* (*f*). Trackers may be of various lengths according to the size and position of the instrument. The little wire passing from the end of the tracker into the hole in the backfall is made like a screw, or *tapped*, as it is termed; so, where it appears below the backfall, a little leather *button* can be screwed on to it. Two purposes are answered by these buttons; they prevent the tracker from jumping out of position, and they enable the builder to *regulate* the length of the tracker by twisting the button to the right or left. If trackers are very long indeed, they are made to pass through one or more perforated pieces of wood, each

tracker having one hole to pass through. These contrivances are called *registers*, and their object is to prevent the trackers from knocking against each other and making a rattling noise (*g*).

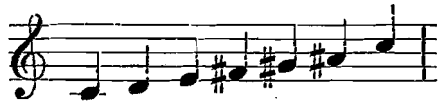
It will appear from the diagram that the upper end of the tracker is fastened to a *pull-down* (*h*) or piece of wire, one end of which passes out of a small hole in the wind-chest (*i i*), while the other is fastened to the bottom of the pallet (*J*). This has been purposely done to give the younger reader a general idea that the key pushes sticker, sticker raises front of backfall and at the same time forces down the further end of backfall, backfull pulls tracker, tracker pulls pull-down, pull-down pulls down (as its name implies) pallet, pallet allows wind to rush up to pipe.

25. But as a matter of fact the pipes are not arranged all of a row, beginning with the smallest on the right-hand side, ending with the largest at the left-hand side. If pipes were so arranged in large organs, not only would they present a very ugly appearance, but all the weight would rest on one side; and also, as large pipes take much more room of course than little ones, the left-hand side of an organ would have to be of much greater depth. And again, if this arrangement of pipes were followed, the resources of the box of air, or wind-chest, would be taxed to the utmost on the left side where the big pipes were standing, while the other end would only have to supply tiny pipes. All these considerations have led organ-builders to place pipes alternately on either side, beginning with the largest. Thus—

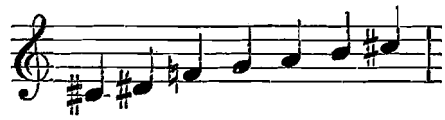
C, D, E, F♯, G♯, A♯, C, and so on, to the smallest; then back again, ending C♯, B, A, G, F, D♯, C♯.

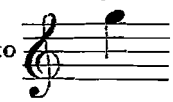
(Largest pipes on left-hand side.) (Largest pipes on right-hand side.)

One is called the "C side," the other the "C♯ side." This accounts for the very unpleasant musical scale heard when a tuner is at work, because he tunes in this order on one side—



and in this order on the other—



If the organ had a compass to 

or G³, the little pipes in the centre would stand thus—

. . . . . C, D, E, F♯, G, F, D♯, C♯ . . . .

The note G would be produced by the smallest pipe, and the pipes would gradually increase in size up to the largest—on the left side to the C of lowest pitch, on the right to the C♯ of lowest pitch.

26. It is evident then that as the pipes do not stand in the same order as the keys, that is, by successive semitones, the action of the trackers will have to move sideways also in order to get under their respective pull-downs. This sideways movement is managed by what is called a *roller-board*. A peep at a roller-board in an organ will show its use and construction far better than any amount of verbal explanation. But it will be easily understood that if a series of little rollers (of wood or thin iron) be placed horizontally on an upright board, having at one end a jutting arm fastened to the tracker, and at the other end a similar jutting arm connected with the pull-down, when the tracker pulls one end of the roller the other end of the roller will move the "pull-down," and the pallet under the foot of the pipe will thus be opened.

FROM BELLOWS TO PIPES.

27. Having shown how the movement of a key acts upon various levers until the pallet is pulled open, our next step will be to trace the progress of the wind from the time it enters the bellows until it reaches the pipe. If the reader can understand these two processes, which always go on simultaneously, namely, leverage from a key and at the same time progress of wind from the bellows, he will have grasped the true principles of the construction of an organ.

The attention of the reader is now called to Fig. 18:—

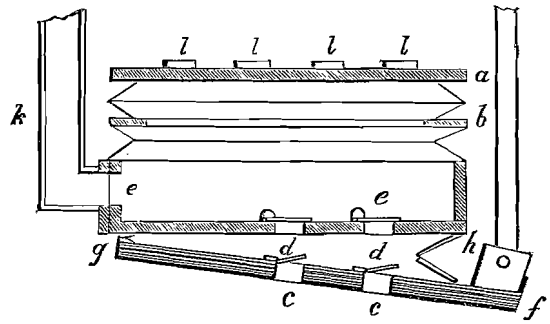


FIG. 18.

The bellows-handle, or whatever lever is employed in its place, moves the *feeder* (*f g*). Feeders are the lowest portion of the bellows, and are perforated with large holes (*c c*), closed inside by light coverings of leather hinged at one end (*d d*). When a feeder is moved down, the air from outside raises these light valves (*d d*) and fills it; but as the return movement of the handle raises the feeder, the air cannot get outside again owing to the openings being covered up by which it entered; it therefore raises the valves in the reservoir (*e e*) above and enters in there. But the entry to the reservoir is closed by valves (*e e*) of similar construction to those which are placed in the bottom of the feeder; as soon therefore as the air has got into the reservoir and the feeder begins to go down for the second time, the valves in the reservoir fall over the opening and the wind is secured *inside the reservoir*. On the top of the reservoir are weights (*l l l l*) carefully adjusted, which make the air try to get out through the *trunk* (*k*) at the side. These trunks are sometimes of metal, more usually of wood, and convey the air into the *wind-chest*. The trunk guiding the wind from the bellows will be seen at *k* in Fig. 18. The following (Fig. 19) shows the action of double feeders; while one (*a*) is feeding the reservoir the other (*b*) is being refilled:—

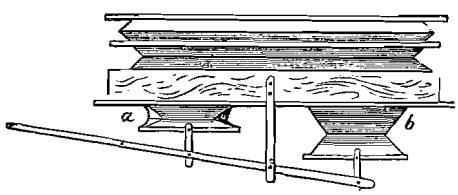


FIG. 19.

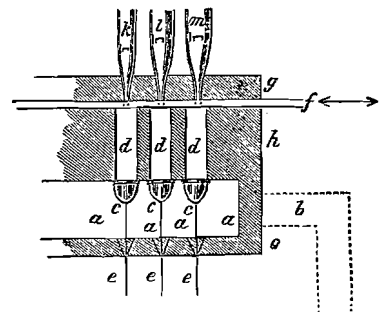


FIG. 20.

The junction of the wind-trunk to the wind-chest is shown by the dotted lines (*b*) in the next illustration (Fig. 20).

28. We have now traced the air into the wind-chest (*a a a a* in Fig. 20). It cannot go into the pipes at once, because the *pallets* (*c c c*) stop the way.

When the action of the keys (just described on page 18) pulls down the pallets, the air makes a rush to get into the pipes through the *grooves* (*d d d*); and it will succeed in getting into the pipes if the *slider* (*f*) is open. The slider is a flat strip of thin wood which moves from left to right or *vice versa*, lying between the top of the wind-chest and the sound-board (*g*) in which the pipes (*k l m*) stand. The holes in the slider correspond exactly with the holes under the pipes. The slider is acted upon by the *stop*. When the stop is *in*, the slider is out of position and the air is arrested in its progress to the pipes by finding no orifice in the slider (*f*). But when the stop is *out*, the holes in the slider are under the holes leading to the pipes, and the air rushes into them and makes them speak. When, however, the key is allowed to return up to its position of rest, the pallet closes sharply and no more air can get to the pipes whether the stop is in or out.

29. As it is often found difficult to explain the action of the slider to young persons, the following way of stating it may be of use. Take three strips of paper, two of white, one of black. Place the black strip between the two white, so that they coincide. Make a few holes through all of them (Fig. 21) :—

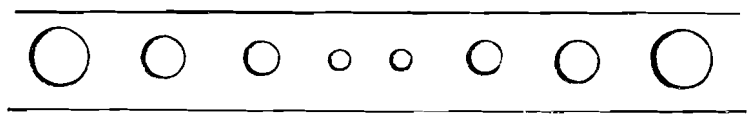


FIG. 21.

Place them on a table. Then the lowest strip of paper represents the top of wind-chest, the black strip the slider, the top strip the sound-board and holes in which pipes stand. It will be evident that air could run through the holes in all the strips and enter the pipes if no further step be taken.

But now take hold of the black paper and give it a little pull to the right. The following (Fig. 22) will be now the appearance on the table :—

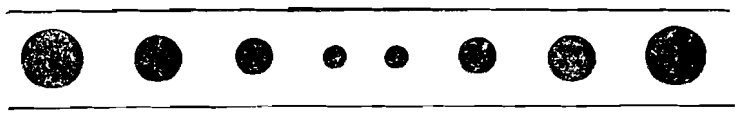


FIG. 22.

It is very evident that, although there is an opening in the white papers, no pipe could now speak because the black paper stops the progress of the air. This is exactly the nature and function of the slider. The stop when *out* makes all the holes coincide, as in Fig. 21; the stop when in makes the slider intervene, as in Fig. 22.

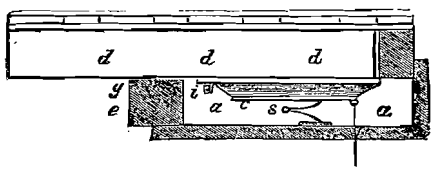


FIG. 23.

In Fig. 20 (at *c c c*), the pallet was only shown from the front; it will make its function clearer if we show it sideways, as in Fig. 23. The pulling of the wire opens the pallet, which is hinged at *i*, the air rushes therefore from *a a* into *d d d*, the groove. On releasing the key, the spring (*s*) instantly closes the pallet.

The action which makes the stop-handle act on the slider is nothing more than a series of arms and levers; and as it is a portion of the mechanism most easily visible when looking inside the instrument it is unnecessary to say more about it here.

COUPLERS.

30. Couplers are of two kinds, manual couplers and pedal couplers; by the former, one of two rows of keys is so connected to another that when that one is being played the other also is acted upon at the same time; by the latter, when the feet are playing on the pedals the lower notes of a manual are simultaneously acted upon. The most simple couplers are those which act upon one of two successive rows, such for instance as "Swell to Great," which signifies that when this stop is drawn and the Great Organ is being played the Swell is simultaneously acted upon. The coupler formerly most commonly used can be thus explained. The backs of the keys are cut away—that of the upper set at the under side, that of the lower at the upper side. A piece of wood is pierced with holes and made into a frame for the little flatheaded stickers shown at *a* and *b*. When the coupler is *not* drawn out the stickers are all at *b*, where they cannot produce any effect; but when the coupler is drawn out the rod and all the stickers are thrown into position at *a*, and therefore upon pressing the front of the lower key the end rises and pushes up the back of the upper key. But *backfall* couplers, that is to say, couplers formed by the use of levers (such as that represented by *e* in Fig. 17, p. 18), are now most frequently met with.

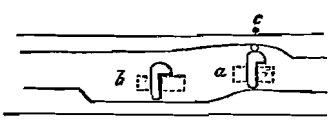


FIG. 24.

The following diagram (Fig. 25) shows both manual and pedal couplers on an organ of two manuals. Backfall couplers are placed out of gear (when the stop is *in*) by a displacement of the backfall frame in such a manner that the wire of the sticker moves up and down without acting on the backfall. Pedal couplers, owing to the extent of the pedal-board being greater than that portion of the manuals on which they act, are constructed by means of a roller-board, or a backfall called a *splay* backfall, because the arms are not parallel to each other.

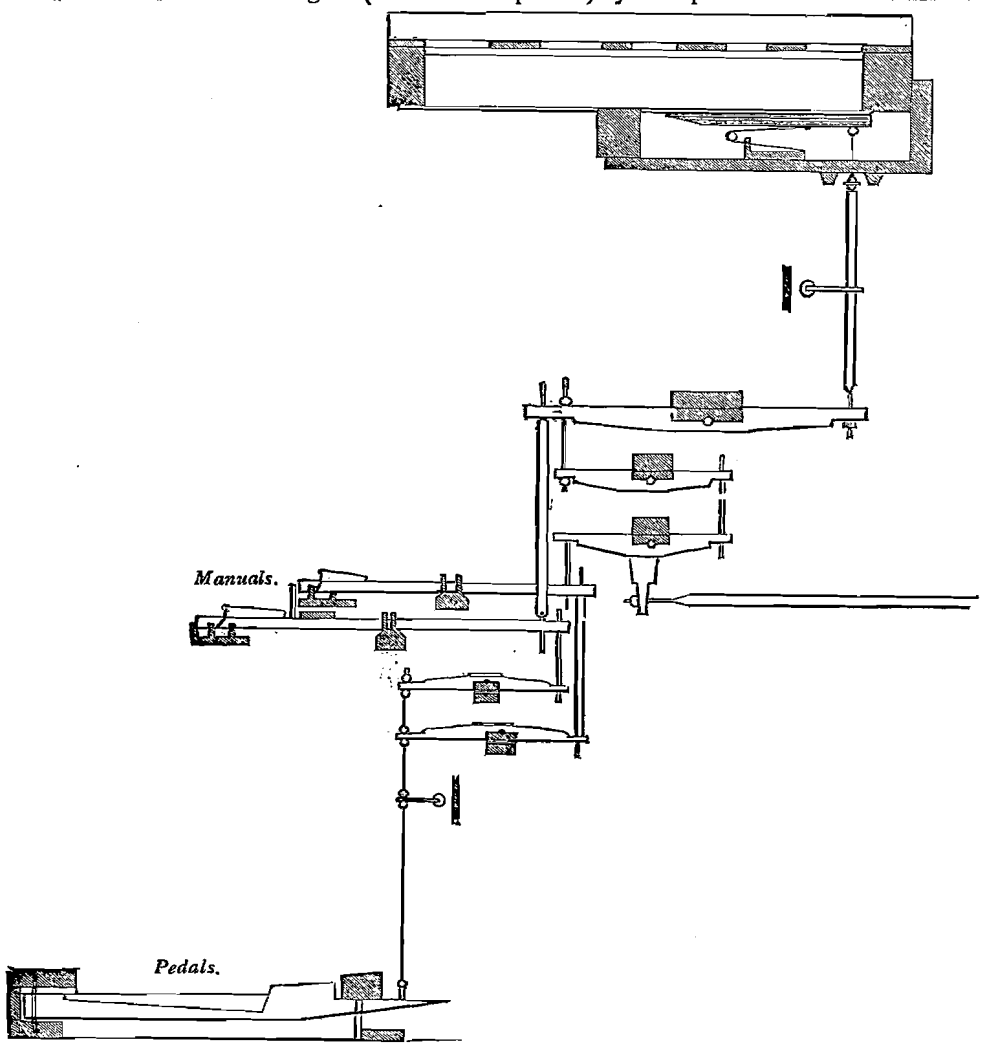


FIG. 25.

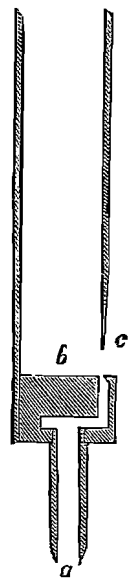


FIG. 26.

FIG. 27.

31. When couplers are drawn the touch of a large organ would be very heavy were it not for the pneumatic lever, for an explanation of which the reader is referred either to Hopkins's excellent work on the organ, or the article "Organ" in Stainer and Barrett's "Dictionary of Musical Terms."

32. The construction of all the flue-pipes in an organ can be gathered from an examination of Figs. 26 and 27; for, although they differ in detail in a vast number of ways, the principle remains the same. The air enters the foot (*a*) or lowest portion, is arrested by a piece of wood or metal (*b*) called respectively the *block* or *languid* (a corruption of the Latin *lingua*), is forced to escape in such a way as to impinge upon the lip (*c*), and thus sets the column of air contained in the pipe into vibration.

33. It is not an easy matter to explain the construction of a reed-pipe either by words or woodcuts. The student is recommended to ask an organ-tuner to take a reed-pipe to pieces and show how it is made. But to those who cannot thus see it with their own eyes, the easiest way to explain it, is to ask them to imagine an ordinary clarinet with the reed end placed into a foot or boot so constructed that the bottom of the foot could be placed on an organ sound-board and the upper part should fit tightly round the portion of the instrument just above the reed. On the admission of the air from the bellows, it would have to pass by the reed of the clarinet to escape; the reed would then by its elasticity beat against the orifice just behind it, and so be set into vibration.

TUBULAR-PNEUMATIC AND ELECTRO-PNEUMATIC ACTIONS.

I.—TUBULAR-PNEUMATIC ACTION WITH COUPLERS (SUPPLY SYSTEM).

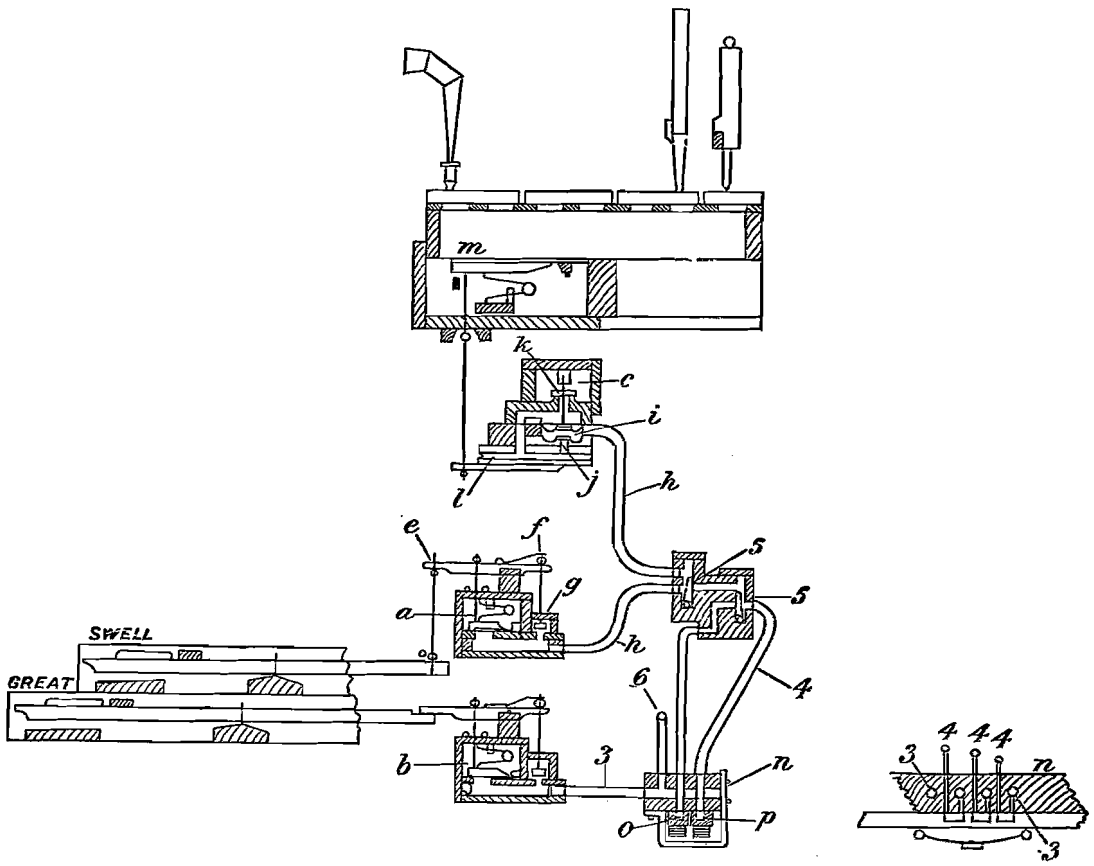


DIAGRAM I.

The chests (*a*), (*b*), and (*c*) are charged with wind from the heavy-pressure bellows. On depressing the swell key the lever (*e*) opens the supply valve in the chest (*a*) and the spring (*f*) closes the exhaust valve (*g*), which allows wind to have access to the tubes (*h*) and the small chamber (*i*). The chamber (*i*) has two very sensitive diaphragms which, by the action of the compressed air, close the exhaust (*j*) and lift the supply valve (*k*), thus inflating the motor (*l*), which opens the pipe valve in wind-chest (*m*). The moment the key rises and opens the exhaust (*g*) the wind pressure in the chest (*c*) expels the wind from the chamber (*i*), which permits the lower diaphragm to exhaust the motor (*l*).

The coupling is accomplished by the slide block (*n*), on which are as many slides (*o* and *p*) as there are couplers on that manual. These slides are supported by springs and have an elongated cavity to each note, so that, when drawn, the main tubes (3) and (6) are coupled to the tube (4). The latter enters another air-tight chamber, the holes of which are guarded by small valves (5). When the Great key is depressed and the coupler drawn the valves (5) are blown over and prevent the wind from escaping through the exhaust valve (*g*), thus playing the Swell organ in addition to the Great organ.

II.—TUBULAR-PNEUMATIC ACTION (EXHAUST SYSTEM).

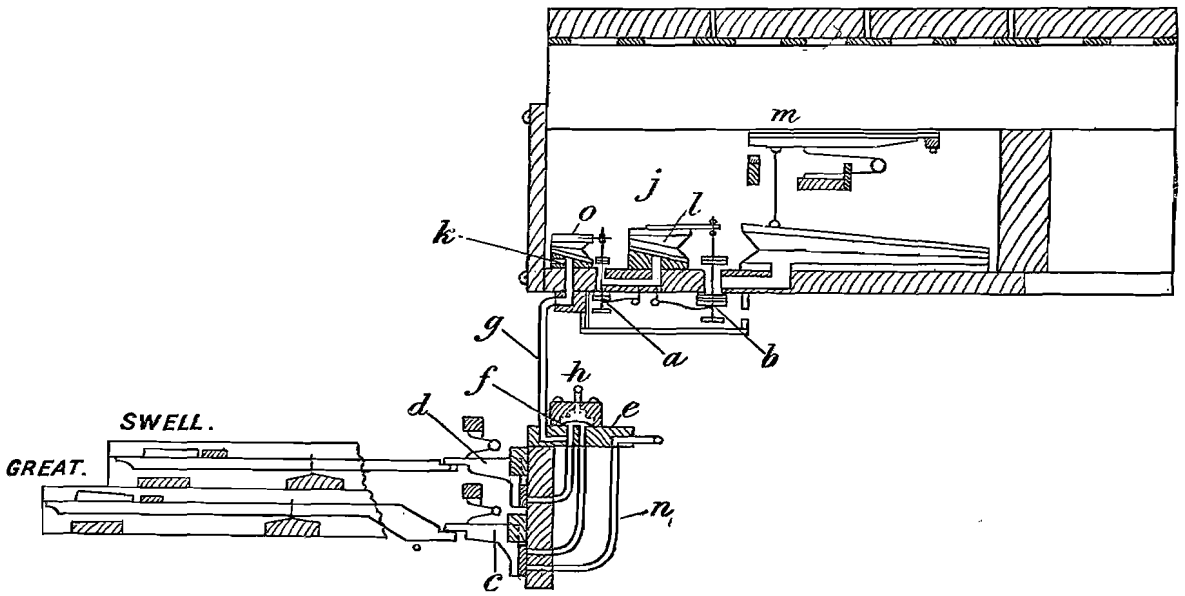


DIAGRAM II.

In this system, when the main bellows is inflated, all the tubes are filled with compressed air through the small automatic supply hole (*k*), which causes all the motors to expand and closes the exhaust valves (*a*) and (*b*). At the end of the Great and Swell keys are valves, fixed on right-angle levers (*c*) and (*d*); these valves cover holes which are connected by tubes to the coupler (*f*) and to the main tubes (*n*) and (*g*). On depressing the Swell key the lever (*d*) exhausts the tube (*g*) and causes the small motor (*o*) to collapse, owing to the pressure in the chamber (*j*), thus opening the exhaust valve (*a*). This movement allows the motor (*l*) to collapse, and therefore exhausts through the valve (*b*) the main motor under the pipe valve (*m*). On releasing the key the automatic supply causes the motors to be re-inflated.

The coupling is shown on the plate (*e*), to which is attached a series of diaphragms, each one covering two holes in a separate chamber (*f*). When the couplers are out of action these diaphragms are held down over the two holes by pressure admitted through the tube (*h*), which prevents wind from passing from one hole to the other. On drawing the coupler the top pressure is released and a connection is thereupon formed between the two holes.

ELECTRO-PNEUMATIC ACTION.

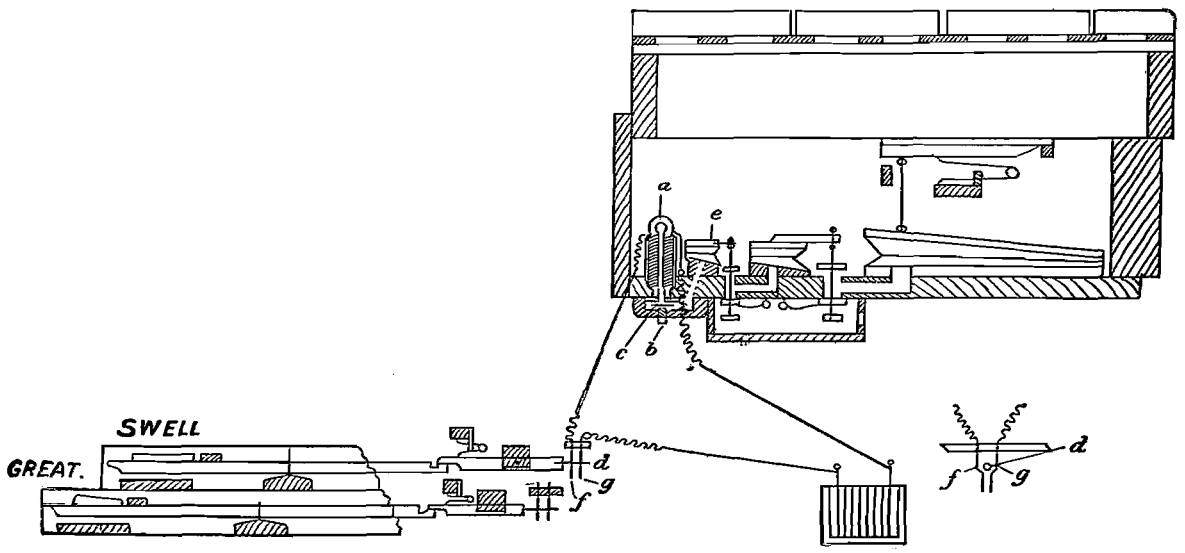


DIAGRAM III.

The pneumatic portion of this action is similar to Diagram II., the automatic supply hole being between the two poles of the magnet (*a*). In a chamber below the magnet is the screwed seating tube (*b*), on the top of which—between guide pins—rests the small round armature (*c*). When the key is depressed the two wires (*f*) and (*g*) are connected by the pin (*d*), thus completing the electric circuit and causing the magnet (*a*) to attract the armature (*c*), by these means opening the tube (*b*) and closing the supply hole between the poles of the magnet. This causes the small motor (*e*) to collapse, and the movement is completed as in Diagram II. On breaking the circuit by releasing the key, the armature is blown off the poles of the magnet on to the tube (*b*), which causes the motors to be re-inflated.

PART III.

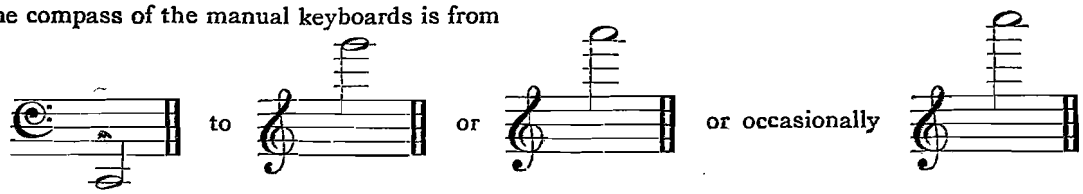
ORDER AND COMPASS OF KEYBOARDS.

When an organ possesses only one row of keys for the hands, *i.e.*, only one *manual*, this generally consists of a suitable combination of stops of either Great, Choir or Swell organs.

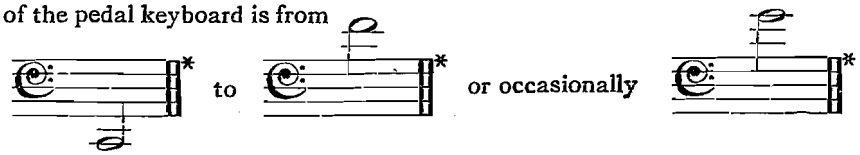
When there are two manuals the lower is generally the Great and the upper the Swell. On instruments of three or more manuals the order from top to bottom is generally as follows:—

					V. Echo (or Celestial).
					IV. Solo.
	III. Swell.		IV. Solo.		III. Swell.
3 manuals	II. Great.	4 manuals	III. Swell.	5 manuals	II. Great.
	I. Choir.		II. Great.		I. Choir.
			I. Choir.		

The compass of the manual keyboards is from



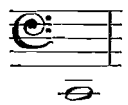
The compass of the pedal keyboard is from



STOPS AND THEIR MANAGEMENT.

34. As a rule, the quality of the tone of a stop can be known from its name, *e.g.*, *Flute*, *Trumpet*, *Viol da Gamba*, &c.

35. The pitch of a stop is made known by stating the length of the longest pipe it contains.

A pipe closed at the top with a stopper, or other covering, produces a note one octave lower than an open pipe of the same length. Thus the note  is sounded by an open pipe of 8 feet in length, but the same note is sounded by a stopped pipe of 4 feet in length. Hence the stopped pipe is said to be of 8-feet *tone* and not of 8-feet *length*.

Stops of 8-feet length or 8-feet tone are of unison pitch, that is to say, are of the same pitch as a pianoforte.

By a law which is familiar to all, a pipe of 4 feet, proportionately formed, will sound notes an *octave higher* than one of 8 feet. So also a pipe of 16 feet will produce a sound an *octave lower* than one of 8 feet; similarly, one of 2 feet two octaves above one of 8 feet, and so on.

36. Hence a 16-feet stop on the manuals is called a *Double* stop.

37. Stops of 8 feet, or unison pitch, are called Foundation stops (if not specially voiced for solo use).

38. Stops of 4 feet, 2 feet, also of 5 feet 4 inches, and 2 feet 8 inches, are called Mutation stops.

39. Stops having several small pipes to each note are called Compound stops.

It will be convenient, therefore, to divide stops into these four heads:—

1. Double.
2. Foundation.
3. Mutation.
4. Compound or Chorus.

* These are the notes as *written*, but the normal *pitch* of the Pedal notes is an octave lower than that of the Manuals (*see* 46, page 29).

MANUAL FLUE-STOPS.

40. The DOUBLES most usually met with are:—

LENGTH.	NAME.	CHARACTER.
Of 16-feet length or tone ...	Double Stopped Diapason, or Double Dulciana, or Bourdon (16-feet tone)	Soft and sweet.
	Double Gamba or Contra Gamba	Reedy, but generally soft.
	Double Open Diapason or Double Diapason, metal	Of full, rich tone.

41. The FOUNDATION STOPS usually met with are:—

Of 8-feet length or tone ...	Stopped Diapason	Soft and sweet.
	Lieblich Gedackt	
	Clarinet Flute	
	Rohrflöte	
	Hohlflöte	Sweet, but of fuller tone.
	Harmonic Flute	
	Salcional or Salicet	Soft and reedy.
	Dulciana	
	Keraulophon	
	Echo Gamba	
	Gamba or Viol da Gamba	Very reedy.
	Gemshorn	Thin and delicate.
	Spitzflöte	
	Viole d'Amour...	
	Small Open Diapason	More powerful than the above.
	Large Open Diapason	Full and rich.
	Bell Diapason...	Very rich, full, and very reedy.
	Flûte à Pavillon	
	Gamba (full-toned) or Bell Gamba	

42. The MUTATION STOPS usually met with are:—

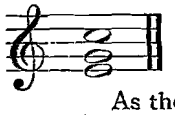
Of 4-feet length or tone ...	Flute	Sweet and bright.
	Waldflöte	
	Flute d'Amour	
	Salicet Flute	Reedy and very bright.
	Gemshorn	
	Geigen Principal	
	Spitzflöte	
	Principal or Octave	Full-toned.
Of 2-feet length or tone ...	Piccolo	Very bright, but "fluty."
	Flageolet	
	Spitzflöte	Very bright, almost shrill.
	Gemshorn	
	Fifteenth or Super-octave	Bright and full-toned.
Of 5-feet 4-in.	Quint	Full tone; adds breadth and dignity in combination.
Of 2-feet 8-in.	Twelfth...	Full tone; adds richness in combination.

[*Some authors exclude stops of 4 ft. and 2 ft. from the class "Mutation," as being only reduplications of the unison; but as stops of 4 ft. and 2 ft. are not foundation-stops, it will be advisable to include them under the head Mutation.*]

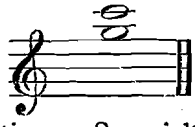
43. The **COMPOUND STOPS** usually met with are:—

LENGTH.	NAME.	CHARACTER.
These stops have several pipes to each note	Echo Cornet	Soft in combination.
	Sesquialtera	Adds fulness.
	Furniture	,, ,,
	Mixture...	Adds brilliancy.
	Sharp Mixture...	,, ,,

So much variety is found as to the number of ranks of Compound stops, their scales, &c., that a separate treatise might well be written on this subject alone. The young reader must be content to know that generally a Sesquialtera is so arranged that on playing the note  the following sounds are produced:



As the continuation upwards of such a series of small pipes would be impossible, there is at certain notes a *break* or *return* to the same sound as an octave lower. This is the case with all Compound stops.

If the Mixture stop be drawn and the note  be played, generally the following sounds will be heard:  but these are very soon changed by a break.

Sometimes a Sesquialtera will contain five ranks, and thus include in it the pipes usually included in the Mixture also.

MANUAL REED-STOPS.

44. The **FOLLOWING LIST** includes the principal stops of this class:—

Of 16-feet length ...	Tenoroon, or Contra Hautboy (or Oboe)... ...	Soft and rich; generally on the Swell Organ.
	Double Bassoon	
	Double Trumpet	Full-toned and rich.
	Trombone	
	Contra Posaune	
Of 8-feet length ...	Oboe (Orchestral)	Of special quality of tone; generally used independently as solo stops.
	Clarinet	
	Corno di Bassetto	
	Cor Anglais	
	Vox Humana	
	Hautboy (or Oboe)	Soft and sweet; used on Swell as Foundation stop.
	Horn	Full and rich (when on Swell).
	Cornopean	
	Trumpet	
	Posaune	Loud and rich.
	Tromba	
	Harmonic Trumpet	Very loud and brilliant (generally on a high-pressure of wind).
	Tuba Mirabilis	
Of 4-feet length ...	Octave Hautboy (or Oboe)...	Bright.
	Clarion	Very bright.

Reed-stops of 2-feet length are extremely rare in the manuals; those of $5\frac{1}{3}$-feet and $2\frac{2}{3}$-feet are never made in this country. Compound reed-stops are unknown.

45. Certain stops do not exactly come under any of the above divisions—such, for instance, as the Vox Angelica, Voix Céleste, or Unda Maris, a stop of an undulating, wavy tone, the peculiar effect of which is produced by placing together two ranks of *Dulciana* or *Salcional* pipes, and then making one rank slightly flatter than the other. The *beats* which result from the want of "accord" cause the characteristic waviness.

The Vox Humana or Voix Humaine is a reed-stop of a strange "whining" sort of tone, supposed by imaginative hearers to resemble the human voice. It is often used not only as a solo stop, but in full chords; and its likeness to the human voice divine is thought to be largely increased by the use of a *tremulant*, or mechanical contrivance for producing a regularly recurring disturbance of the supply of wind, the result being that the tones sound unnaturally nervous and highly mock-pathetic.

The Tuba Mirabilis and Harmonic Trumpet, though generally used as solo stops, are occasionally, for a short time, used in conjunction with the full organ if a remarkably grand *fortissimo* is required.

PEDAL FLUE-STOPS.

46. The all-important distinction between stops on the Pedal Organ and those on the Manuals is that the former are uniformly *one octave lower in pitch*. Thus, as the Open Diapason of a Manual is of 8-feet length, the Open Diapason on the Pedal Organ will be of *16-feet;* also, as the *Double* stops of the manuals are of 16-feet length or tone, those of the pedals are *32-feet*.

47. The DOUBLES most usually found on the Pedal Organ are:—

LENGTH.	NAME.	CHARACTER.
Of 32-feet length or tone ...	Sub-bass, or Double-stopped Diapason, or Contra Bourdon (32-feet tone)	Very soft; of little use but in combination.
	Double Diapason	Very rich and fine down to lowest G or F, then chiefly useful in combination.

48. The FOUNDATION STOPS of a Pedal Organ are usually:—

Of 16-feet length or tone ...	Bourdon (16-feet tone)	Soft and most useful.
	Violone	
	Open Diapason	Full and heavy.

49. The MUTATION STOPS usually found on a Pedal Organ are:—

Of 8-feet length or tone ...	Stopped Flute, or Bass Flute (8-feet tone)	Sweet and soft; generally useful.
	Violoncello	
	Principal or Octave	Full-toned; most useful to strengthen the bass.
Of 4-feet length	Fifteenth or Super-octave	Adds brightness.
Of 10-feet 8 inches	Quint	Produces a very heavy tone in combination.
Of 5-feet 4 inches	Twelfth	Adds brightness.

50. A COMPOUND STOP is often found on large Pedal Organs, namely:—

Mixture	Of three or more ranks.

PEDAL REED-STOPS.

51. The FOLLOWING LIST includes the chief stops of this class:—

LENGTH.	NAME.	CHARACTER.
Of 32-feet length ...	Contra Fagotto	Soft, but only useful in combination.
	Contra Posaune	Most useful addition to full power.
	Contra Bombarde	
Of 16-feet length ...	Fagotto or Bassoon	Soft and frequently useful.
	Trombone	Adds weight to a *forte* combination.
	Posaune	
	Bombard	Of great power and grandeur.
	Ophicleide	
Of 8-feet length ...	Bassoon	Soft and useful.
	Clarion or Trumpet	Gives brilliancy to a *forte* combination.
Of 4-feet length ...	Octave Clarion	Adds brilliancy.

COMBINATION OF STOPS.

The following tables of combinations will teach the student the principles on which stops are added to each other, and what stops to draw when practising by himself. It will be found that in the case of a large organ the numbers of Foundation, Mutation, and Compound stops remain in much the same proportion as in a small instrument.

GREAT ORGAN.

52. The progressive stages of tone on the Great Organ will be (if the instrument has no Choir Organ)—

Dulciana, 8 feet
Lieblich or
Stopped Diapason, 8-feet tone
Gamba (if soft), 8 feet
Flute, 4-feet tone or 4 feet
— *pp* — *p* (bright) (other combinations as below).

Or (if there is a Choir Organ)—

	pp	*p*	*mf* (rich)	*mf* (fuller and brighter)	*mf* (almost *f*)	*f*	*ff*
Clarabella, or Claribel Flute, 8 feet, or Stopped Diapason, 8-feet tone	✓	✓					
Soft Open Diapason, 8 feet	✓	✓					
Large Open Diapason, 8 feet		✓	✓				
Gamba or Viola, 8 feet		✓	✓				
Flute, or Harmonic Flute, 4 feet		✓	✓				
Principal (or Octave), 4 feet			✓	✓			
Double Diapason, 16 feet, or 16-feet tone			✓	✓	✓		
Twelfth, 2 feet 8 inches			✓	✓	✓		
Fifteenth, 2 feet			✓	✓	✓		
Sesquialtera			✓	✓	✓	✓	
Mixture			✓	✓	✓	✓	
Double Trumpet, 16 feet			✓	✓	✓	✓	
Trumpet, 8 feet			✓	✓	✓	✓	
Clarion, 4 feet			✓	✓	✓	✓	

If the Great Organ pipes are not on a high pressure of wind, the following would be a common gradation of power on a small instrument:—

Stopped Diapason, 8-feet tone ...							
Clarabella, 8 feet...	*pp*	*p*	*mf*	*f*	*ff*		
Open Diapason, 8 feet							
Principal, 4 feet							
Flute, 4-feet tone							
Twelfth, 2⅔ feet							
Fifteenth, 2 feet							
Bourdon, 16-feet tone							
Sesquialtera							
Trumpet, 8 feet							

The Stopped Diapason and Clarabella or Harmonic Flute (8 feet) are valuable as solo stops.

A good "Small Open Diapason" is often most useful as a solo stop, especially in the middle and lower portions.

Other combinations, such as Flute, 4-feet tone, with Bourdon, 16-feet tone, or the Trumpet with or without the Diapasons, will be found available for special effects.

SWELL ORGAN.

53. The chief characteristic of the Swell Organ is the number of its reed-stops. The fine *crescendo* obtained by their use accounts for this.

The following will show the ordinary gradations of tone required:—

Vox Angelica (or Voix Celeste)* or Salcional, or Dulciana, 8 feet, or... ... ... Echo Gamba, 8 feet	*pp*	*pp* (rather fuller)	*p*	*mf*	*f*	*ff*			
Stopped Diapason, or Lieblich, 8-feet tone									
Open Diapason, 8 feet									
Double Dulciana, or Bourdon, 16-feet tone									
Principal (or Octave), 4 feet									
Hautboy (or Oboe), 8 feet									
Fifteenth, 2 feet									
Cornopean or Trumpet, 8 feet									
Sesquialtera, or Mixture, or Echo Cornet									
Double Trumpet, 16 feet									
Clarion, 4 feet									

* The Vox Angelica (or Voix Celeste) is *rarely* used in *combination*.

Some beautiful effects may be obtained by playing *an octave higher* on such combinations as the following:—

Bourdon, 16-feet tone; Dulciana or Salcional, 8 feet — or — Double Dulciana, 16 feet; Stopped Diapason or Lieblich, 8-feet tone; — or — Double Trumpet, 16 feet (if soft); Hautboy, 8 feet.

If the stops of a Swell Organ are thoroughly well balanced as to tone, a mysterious and solemn effect can often be obtained by using all the stops *except the reeds*, or, as it is termed, playing "full without reeds."

On many Swells the following is a peculiar but charming combination:—

Bourdon, 16-feet tone, or Double Dulciana, 16 feet
Stopped Diapason, 8-feet tone ... ...
Open Diapason, 8 feet ... ...
Principal, 4 feet; Flute, 4-feet tone ... ...
Fifteenth, 2 feet, or Piccolo, 2 feet ... ...

The stops on the Swell often used for solos are—

Hautboy (alone, or with a Diapason) ... ... — Accompanied on Choir, *p*.

Cornopean or Trumpet (alone or with a Diapason) ... — Accompanied on Choir, *p*, or Great, *pp*.

The Swell Organ derives its name from the fact that its pipes are enclosed in a Swell box, the opening and closing of which gives the effect of increasing and diminishing the volume of sound. This is controlled by means of a contrivance named the Swell pedal, which is moved by the right foot of the performer.

CHOIR ORGAN.

54. As a rule, stops of a delicate quality of tone are generally assigned to the Choir Organ. The following would be ordinarily a graduated list of combinations on the Choir Organ:—

Dulciana, or Salcional, 8 feet ... — *pp*
Viol da Gamba, 8 feet ... ... — *pp*
Lieblich or Stopped Diapason, 8-feet tone ... — *p*
Clarabella ... ... — *p*
Open Diapason ... ... — *mf*
Flute, 4 feet ... ... — *mf*
Principal, 4 feet ... ... — *mf* (bright)
Double Dulciana, or Double Stopped Diapason, 16 feet ... — *f*
Piccolo or Flageolet, 2-feet tone ... ... — *ff* (very bright)

Solo combinations on Choir Organ:—

Flute, 4 feet ... / Viol da Gamba, 8 feet — Very bright and pretty.

Flute, 4 feet ... / Clarabella, or Lieblich ... — Clear and sweet.

Clarinet, or Cremona, or Krummhorn, or Corno di Bassetto, 8 feet, with Lieblich, or Clarabella — Very full and rich, but soon becomes monotonous.

Piccolo, 2 feet / Stopped Diapason, or Lieblich — Very brilliant for rapid runs in variations, &c. Must be used sparingly.

The addition of a 4-feet flute to a stop of "clarinet" tone produces a somewhat tender and mournful effect.

Solo stops or combinations on the Choir Organ will ordinarily be accompanied by a soft (not too soft) combination on the Swell.

In cathedrals and churches where there is a choral service, the soft stops of the Choir Organ form a charming accompaniment to a solo voice or voices *soli;* but this organ is rarely powerful enough to give support to a large number of voices singing *forte*.

On many instruments now the pipes of the Choir Organ are placed in a separate Swell box, and controlled by a separate Swell pedal.

SOLO ORGAN.

55. As its name implies, to this organ are assigned stops for solo use. Except in very large organs, not more than four distinct qualities of tone are found amongst these registers, namely, Flute (8 feet or 4 feet), Oboe (Orchestral), Clarinet, Tromba (or Tuba).

It will hardly be expected that anything should be said as to the "combination" of stops specially intended for independent use. All that need be pointed out is, that many organists use always an 8-feet Flute or Clarabella with the Clarinet, in order to give it more *body*. Some players use always an 8-feet Flute with the solo Tromba (or Tuba) because it gives mellowness to the tone.

The solo stops can be accompanied by any row of keys found suitable. On account of the remarkable power of the Tromba (or Tuba) the Great Organ is frequently used as an accompaniment to it. When this stop is of a rich, pure tone it may occasionally be used in full chords, either on its own row of keys or coupled to the full Great.

The pipes of the Solo Organ, like those of the Swell Organ, are placed in a separate Swell box, and actuated by a separate Swell pedal.

ECHO OR CELESTIAL ORGAN.

This is only to be found on exceptionally large organs, and its pipes are placed at some distance from the rest of the instrument. It is practically an independent Organ on a small scale, consisting of Flue and Reed Stops, imitations of Bells, &c., and intended for special and distant effects.

PEDAL ORGAN.

56. On small organs the player has not a large number of pedal stops to select from. On large instruments considerable skill may be displayed in the use of varieties of tone on the Pedal Organ and their adjustment to the power and quality of the manuals. On organs with two pedal stops, a Bourdon, 16-feet tone (or in its place a Violone of 16 feet), forms the soft pedal, and an Open Diapason of 16 feet is added for *forte* passages; all other gradations of tone being obtained by coupling the manuals to the pedals. A pedal stop of 32-feet length is rarely used alone except in its upper portion.

	pp	*p*	*mf*	*f*	*ff*
Double Diapason, 32 feet Bourdon, 16-feet tone, or Violone, 16 feet ...	...	...	...	...	...
Open Diapason, 16 feet ...	...	...	...	...	...
Bass Flute, 8 feet ...	...	...	...	...	...
Principal or Octave, 8 feet ...	...	...	...	...	...
Violoncello, 8 feet ...	...	...	...	...	...
Mixture ...	...	...	...	...	...
Quint, $10\frac{2}{3}$ feet ...	...	...	...	...	...
Contra Posaune, 32 feet ...	...	...	...	...	...
Trombone, or Posaune 16 feet ...	...	...	...	...	...
Clarion, or Trumpet, 8 feet ...	...	...	...	...	...

On large organs having some very delicate pedal reed-stops such as Fagotto, 16 feet, or Fagotto, 8 feet, some delightful effects can be produced by their judicious use.

It is very difficult to give any definite advice as to the coupling of manuals to pedals. For *legato* playing and where uniformity of tone is necessary, it is generally advisable to couple them to the particular manual on which the chief harmonies are being played. Soft *staccato* passages, however, generally sound better when played on pedal stops without any manual being coupled.

Young organists should be specially warned against the use of too many pedal stops. The over-weighting of the manual-tone by the Pedal Organ becomes exceedingly unpleasant if continued for any length of time. Variety is as important in the use of pedal stops as in every other department of playing.

MANUAL COUPLERS.

57. In all pieces or passages in which the *crescendo* of the Swell is required in addition to the steady, dignified tone of the Great, it is usual, of course, to couple the Swell to the Great Organ; but, on the other hand, the occasional use of the Great *without* the Swell coupler, especially if the diapasons are good, will be found to produce a very pure and "fresh" effect.

58. When an organ contains a coupler "Swell to Choir," this may be drawn with advantage, either for the purpose of adding a *crescendo* to a passage being played by both hands on the Choir; or, when a solo combination is being used on the Choir with accompaniment on the Swell, for the purpose of producing the same *crescendo* in the accompaniment as in the solo part.

59. A very valuable addition to the Diapason or flute-tone of the Great Organ is obtainable by the coupler "Solo to Great," which enables any rich-toned stop of 8 feet or 4 feet on the Solo to be combined with the 8 feet or 4 feet stops of the Great.

60. "Octave couplers," such as "Swell to Great super-octave" or "Swell to Great sub-octave," will be found occasionally of great value, not only as productive of unusual effects, but also as enabling the player to render rapid orchestral octave passages effectively and smoothly while playing only single notes.

61. By drawing one or more fine reed-stops on the Swell, shutting off *all* the Great Organ stops, and drawing sub-octave, unison, and super-octave couplers, a very fine *crescendo* may be obtained by playing on the Great Organ manual with both hands.

GENERAL REMARKS.

62. In the matter of combining stops, a little experience is worth a vast amount of theory.

A refined ear and good taste will point out unmistakably, first, what combinations of stops produce a really good tone; next, which combination is most suitable for a particular passage.

It is specially necessary to warn young organists against implicit obedience to the directions given in arrangements for the organ. For instance, "full swell" is *pianissimo* on some organs in large buildings, but *fortissimo* on many others; "up to mixtures" in old cathedral organs means a rich *mezzo forte*, whereas in a modern organ (especially in a small place) it is probable the result would be a screamy *fortissimo*. When an "arranger" has an instrument with bad "Double Diapasons" he is constantly writing the direction "without doubles," whereas if they are so properly voiced as to become a subordinate ingredient of the tone their frequent use is not only admissible but desirable. On an instrument with a small weak-toned Pedal Organ a good player frequently plays the pedal part in *octaves*, but if this were to be indiscriminately followed on a properly balanced instrument the effect would often be detestable. Many German writers have written for organs possessing a large independent Pedal Organ, but very intractable couplers (if any) of "manuals" to "pedals": in order therefore to get *strength* of tone these composers give frequent passages in octaves. When played on an English organ with proper couplers these gymnastic efforts may often (not always) be dispensed with.

USE OF THE SWELL PEDAL.

63. A good organist may be known, if by nothing else, by his use of the *crescendo* of the Swell Organ. A bad player, when he has a leg to spare, seems to think it cannot be better employed than by pumping the Swell pedal up and down with utter disregard to the composer's intentions. It might often be said that such performers try to use the Swell pedal even when one leg *cannot* be spared, and thus frequently sacrifice beautiful

pedal passages by consigning their rendering to the frantic efforts of the left foot only. On one occasion the writer remembers to have heard an organist performing on an instrument having a very prominent Swell Organ case with highly-decorated shutters. He was playing on the *Choir* Organ with both hands and without using the pedals, but so strong was the force of habit that his right leg was busily engaged working the Swell pedal. The absurd effect can be imagined; the tone remained level and passionless to the ears of the hearers, while their eyes were annoyed by the meaningless "gaping" of the Swell shutters.

The following rules should be impressed on young players:—

"Never use the Swell pedal unless the proper expression of the music demands a *crescendo* or *diminuendo*."

"Never sacrifice the proper performance of a pedal passage for the sake of using the Swell pedal."

"Be as careful of the way you let the pedal return upwards as of the way you press it down."

"Observe carefully the length of the passage marked *crescendo*, and do not get the Swell fully open till the *climax*—unless you are prepared to carry on the *crescendo*, by adding stops."

"The Swell *crescendo* is the more effective, if not used too frequently."

USE OF THE TREMULANT.

The early student will be well-advised to avoid altogether the use of the Tremulant. Great judgment is required in the selection of those rare and brief occasions on which it may effectively be called into play, and this can only be gained by considerable experience. It is a matter for regret that many players—and even composers—of the present day, make far too much use of this somewhat artificial and *ad captandum* device. Perhaps it is only fair to mention, however, that the modern Tremulant is much less aggressive than its representative of earlier days.

MANAGEMENT OF STOPS.

64. Stops should on no account be changed either by composition pedals, pistons, or the hand, unless it can be done without breaking the time or disturbing the rhythmical form of the music.

It is the more important to impress this upon the young organist at the present time, inasmuch as it has become a vicious fashion among a certain class of organists to hold down a chord for more than its proper duration with one hand while the other is ostentatiously hunting about for stops. This trick is bad enough when it happens to be the final chord of one movement which is unduly protracted for the purpose of preparing the stops for that which is to follow; but when, as is often the case, it is a chord in the middle of a passage which is selected for protraction, only because it can be conveniently held down by one hand, the effect is truly distressing. The beginner will therefore do well to bear the following rule in mind:—

"Never sacrifice the time or rhythm of a passage in an attempt to change the stops. Consider that the alteration of stops should have the result of producing a better rendering of an author's composition, not of ruining its effect."

PART IV.

—o—

PRACTICAL STUDY.

65. The student who wishes to become a *good* organist should not commence his practice on the king of instruments until he has a thorough knowledge of musical notation, can read fairly at sight, is able to play *all* his scales evenly and rapidly on the pianoforte, and, above all things, can carry his hand in a good position whilst playing chords or scales.

The "Rudiments of Music" can be learned from the Primer so named published in this series; and the *formation of the hand* will soon be achieved by the help of a careful teacher and the "Pianoforte" Primer.

For giving elasticity of action to the fingers and wrists, for forming the position of the hand, and for training the touch, the pianoforte stands unrivalled. All this portion of an organist's work (and it is a *most* important portion) should be done *at the pianoforte*.

It should be distinctly understood that these things cannot be learned on a harmonium, for, delightful and useful as that long-suffering instrument is, it cannot, from its nature, so well lead a player to good organ-playing as can the pianoforte.

The student should not be in a hurry to get to the organ itself. It is no exaggeration to say that more organists have been spoiled by beginning their instrument too soon than too late.

We will assume then that our pupil has received *permission* to commence organ-practice from a trustworthy master.

66. The difficulties peculiar to performance on and management of an organ, as distinguished from a pianoforte, may be classified as follows:—

1. Playing with the feet, or pedalling.
2. Independence of movement between the hands and feet, separately and in combination.
3. Use of the *legato* and *staccato* touch.
4. Management of the stops and various mechanical appliances.
5. Method of playing with expression.

67. The nature of these special characteristics of the organ must be kept separately in the mind, although the pupil will, *in practice*, soon meet them in combination.

It may be thought strange that a "method of playing with expression" should be considered a distinctive feature of organ-playing; but the fact is the pupil will not be long before he finds that his musical feeling has to be *expressed* on the organ in a very different way from that usual on the pianoforte, and he will observe that ignorance of this fact is a fruitful source of poor and unsatisfactory performance.

68. The first thing to be learned on reaching the organ is, *how to sit*. It is of the utmost importance that the body should be so placed as to be in readiness for anything required of it.

The following is the test of a good position:—

When seated, lift up both feet and hold them just over the pedals so that they could play, if required, either on the long or short pedal-keys, *at the same time* holding both hands over the manuals so that they could play, if required, on any of the manuals either separately or in conjunction with the feet.

If the pupil, while in this position, has an uncomfortable sensation that he is likely to knock his nose against the desk, the organ-stool is too far away from the keys or he is sitting too near to its edge.

If the pupil cannot move his knees freely to the right and left, the stool is either too near the keys or he is sitting too far on it.

69. Shoes or boots worn when playing should not be made too *narrow* or too *round* at the toe; they should have fairly deep heel-pieces. The reason why it is necessary to have heel-pieces will be explained hereafter. Lady-pupils should avoid very small and also very circular heel-pieces, unless indeed they are prepared to undergo a temporary imprisonment or purchase liberty by the sacrifice of a boot. The *soles* should be of moderate thickness; for if they are too thin, many delicate muscles of the foot will be called into play whose co-operation is totally unnecessary in pedalling, but whose use will cause *great fatigue* to the hard-working student.

70. There are two kinds of pedal-boards, known as straight and radiating; both are sometimes made slightly *concave*, that is, rise gradually at the extremities. Radiating pedal-boards were invented by Mr. Henry Willis.

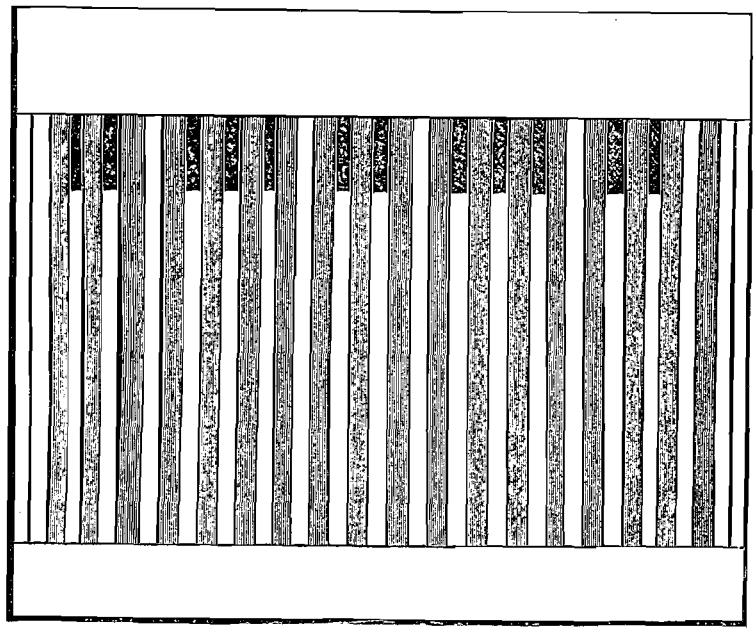


FIG. 28.—Straight Pedal-board.

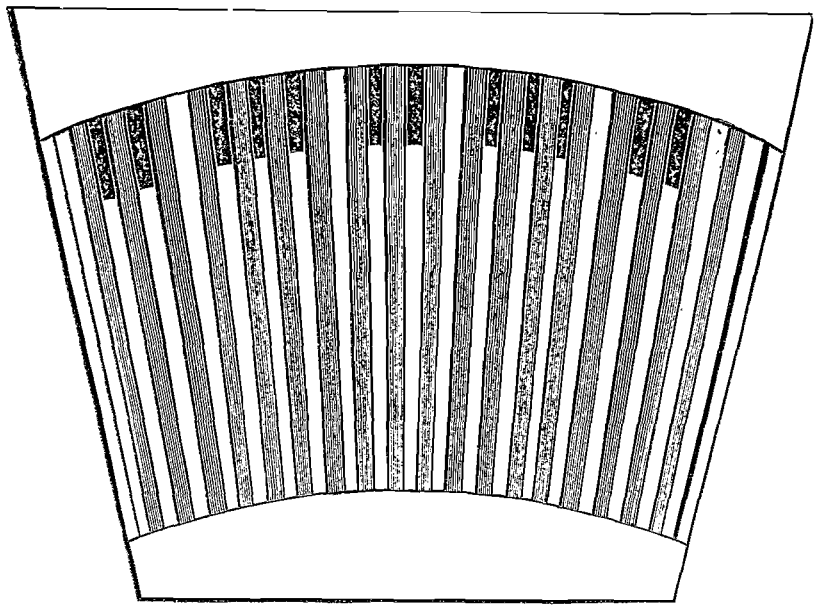


FIG. 29.—Radiating Pedal-board.

FIG. 30.—Section showing concavity of Pedal-board.

The pedals are played in three ways:—

(1) By the tip of the toe.

(2) By the heel.

(3) By the flat part of the sole.

(1) Many passages can be easily and neatly played by the toes only.

(2) The heel is only used immediately before or after the toe of the same foot. Hence, passages in which systems (1) and (2) are combined are said to be "toed and heeled."

Single separate notes are never played by the heel.

(3) The flat part of the sole of the foot is only used in those scales or portions of scales which contain three sharp-keys (short pedal-keys) in succession.

Thus, if F♯, G♯, A♯, or G♭, A♭, B♭ follow each other upwards or downwards in succession, two of the notes must be played by placing the sole of the foot over *both* and then pressing down one key with one side of the foot, the other key with the other side.

71. As the pupil gains experience he will find that the three systems (1) (2) (3) above named are constantly mixed together. But, as a general principle, it may be stated that "toe and heel" is the easiest method of playing passages at the two extremes of the pedal-board (that is, passages which are very high or very low); while, on the other hand, pure "toeing" is easiest for passages in the central portion of the board, that is, passages lying just below the player's body.

72. Before taking the first lesson in pedalling it is of great importance to know that—

The weight of the leg should never be used for pressing down the pedal-keys; only that force should be used which can be obtained from the free use of the ankle-joint.

This rule is analogous to that laid down by pianoforte teachers to the effect that octave passages should be played *from the wrist* and not from the arm and shoulder. The pupil will know by experience how futile it is to attempt to play octaves rapidly on the pianoforte unless the wrist-joint is perfectly free; so also he will soon find that his leg is far too clumsy to be used as a sort of *hammer* for driving down the foot, whereas, if the ankle-joint is properly used, rapid pedalling is quite easy.

When seated at the organ try and imagine that your foot moves (as it actually does) upon a centre or pivot of its own, as shown in Fig. 31 by the asterisk.

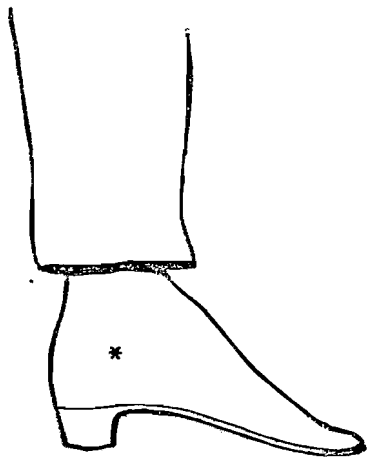


FIG. 31.

Then, if you are using the proper method of touching the pedals, you will feel, when your *toe* goes *down*, as if your *heel* were coming *up;* and when your heel goes down, as if you were *raising the toe.*

There is no reason therefore why the whole leg should jump up and down during pedalling, and such a habit is both unnecessary and ugly.

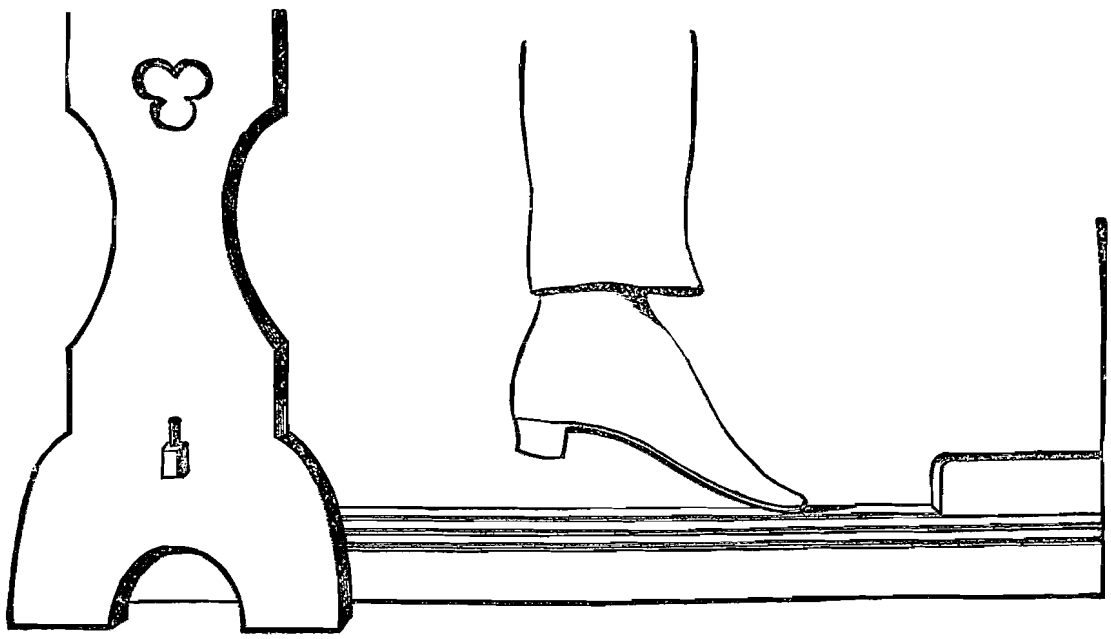


FIG 32.—Toe down on Pedal-key.

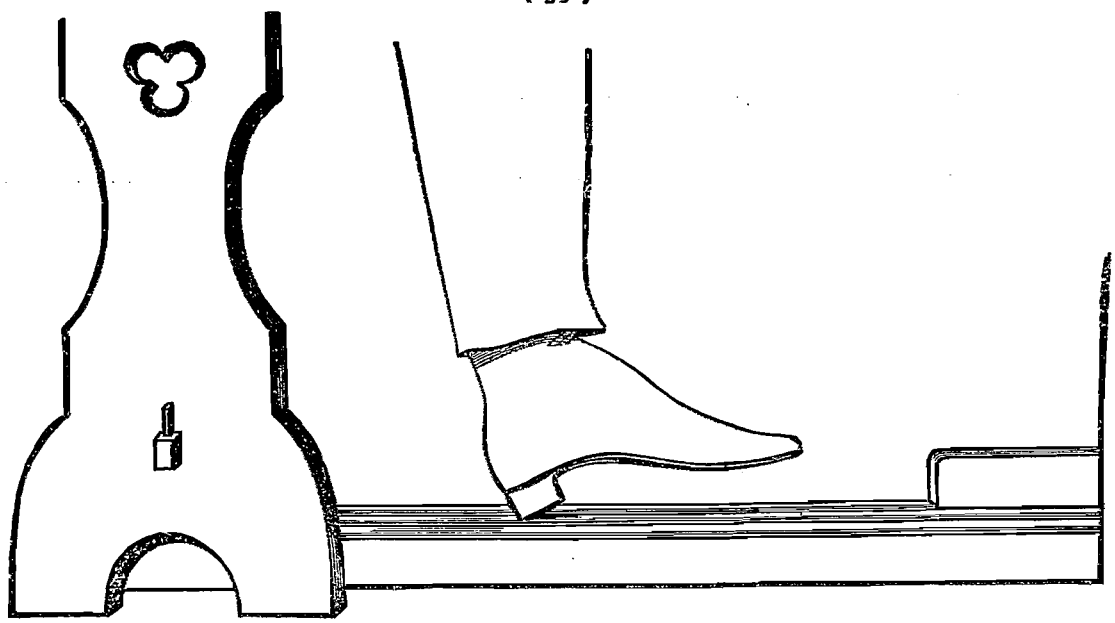


FIG. 33.—Heel down on Pedal-key.

If, by constantly bearing this in mind, a good pedal-touch is obtained, the ankle-joint will become elastic and free, and rapid passages can be played with that perfect ease and quietness so characteristic of a really good organist.

But if the pedal-touch be neglected the ankle-joint will become stiff and rigid, and the *weight of the leg* will be used to drive the sole of the foot on to the pedal-keys, resulting perhaps in the destruction of some of the delicate mechanism of the instrument, but most certainly in rendering the performance of rapid passages *absolutely impossible.*

73. Before sitting down to play on a strange organ the pupil should have a good look at the pedal-board, but when once seated, he should on no account be allowed to steal occasional peeps at it.

This rule is laid down in order that the pupil may begin at once to play the pedals with confidence and without hesitation. A *nervous* pedallist distresses his hearers as much as himself.

74. When the foot is placed on one of the natural keys of the pedal-board, it should be fairly up to the *sharp-keys*, as shown in Fig. 34.

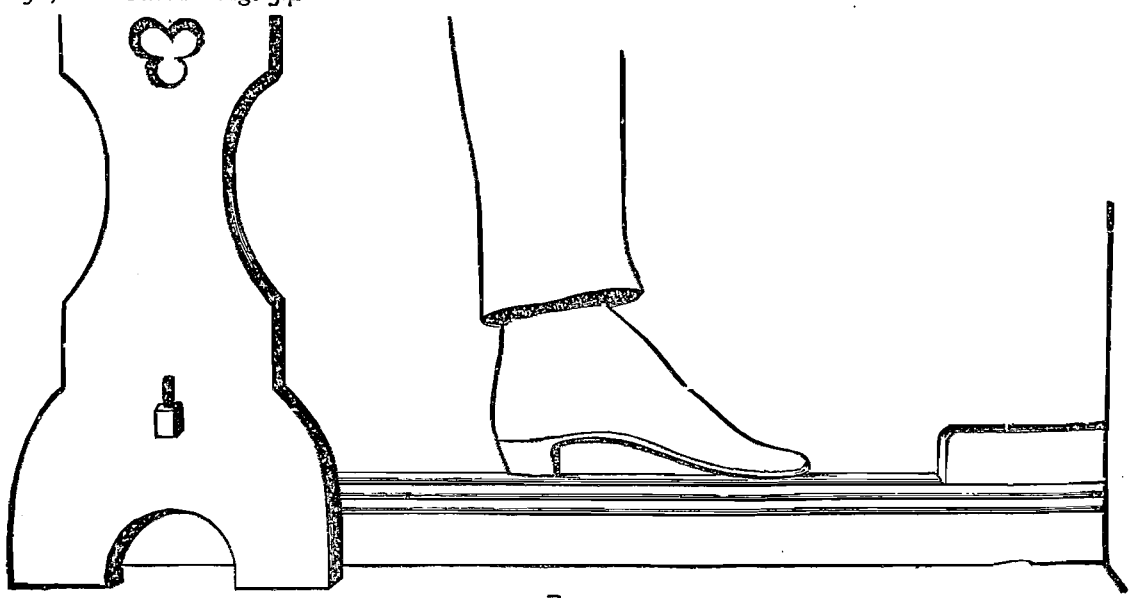
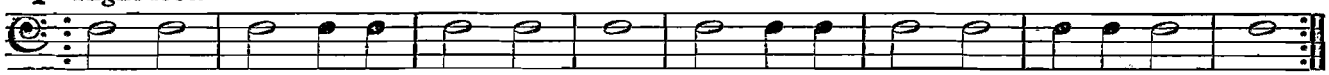


FIG. 34.

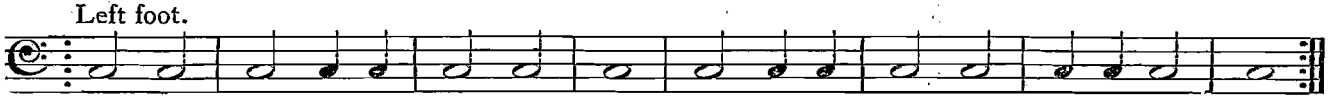
EXERCISES FOR THE FREE USE OF THE ANKLE-JOINT.

TO BE PLAYED BY THE TOES WITHOUT ANY "UP AND DOWN" MOVEMENT OF THE KNEES.

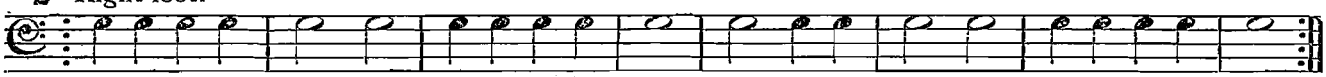
1 Right foot.



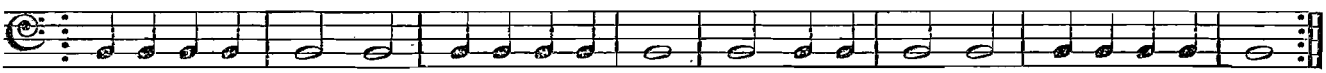
Left foot.



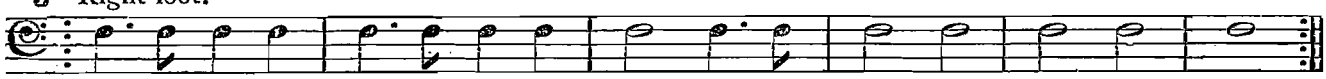
2 Right foot.



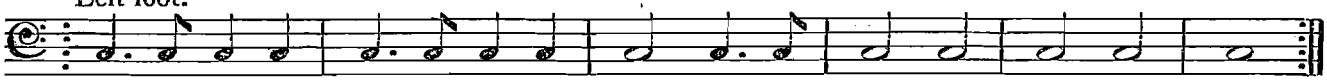
Left foot.



3 Right foot.

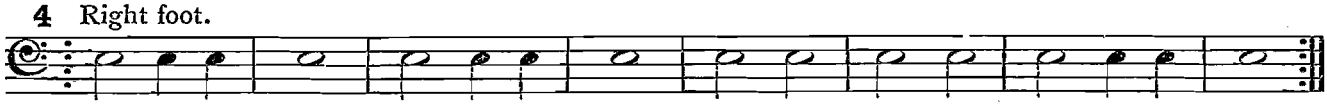


Left foot.

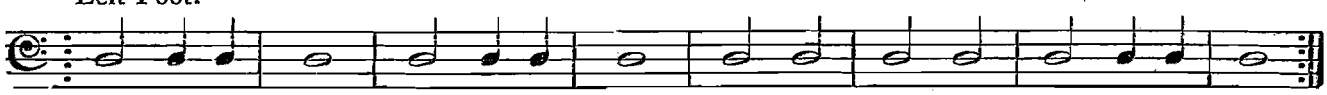


TO BE PLAYED BY THE HEELS, WITHOUT USING THE WEIGHT OF THE LEG.

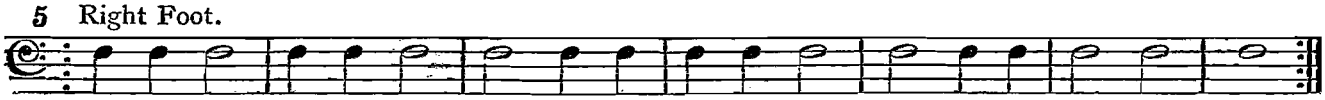
4 Right foot.



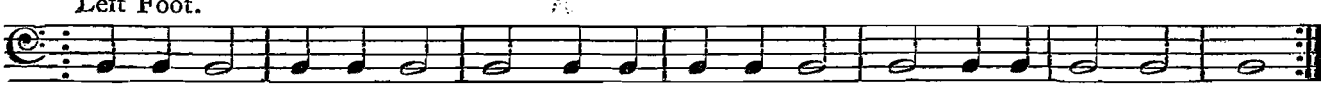
Left Foot.



5 Right Foot.



Left Foot.



75. Nothing is more fatal to good pedalling than the vicious habit of shuffling along the seat—to the right-hand side in search of high notes, to the left-hand side in search of low notes.

The pupil should never forget that by changing his position on the organ-stool he alters every one of the measurements from his body to the pedal-keys.

The following (Figs. 35 and 36) will make this plain :—

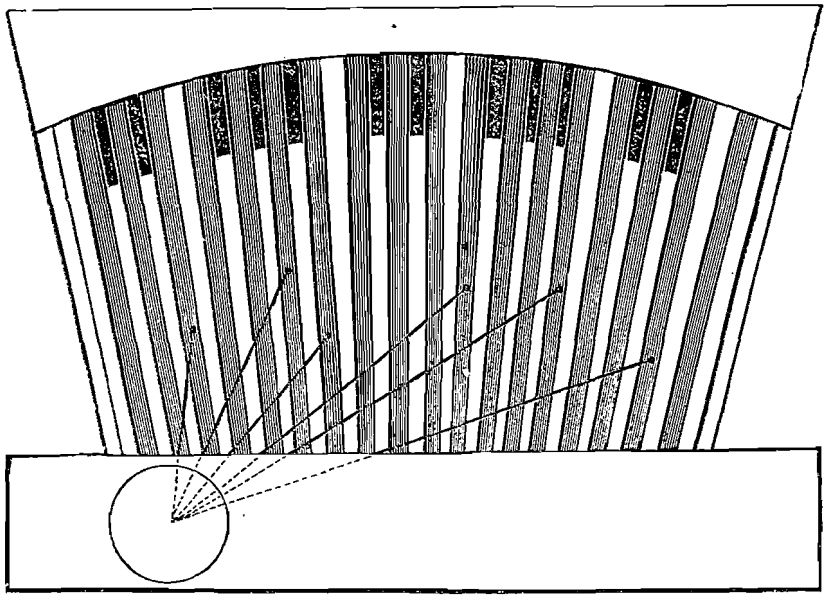


FIG. 35.—Measurements from left-hand side.

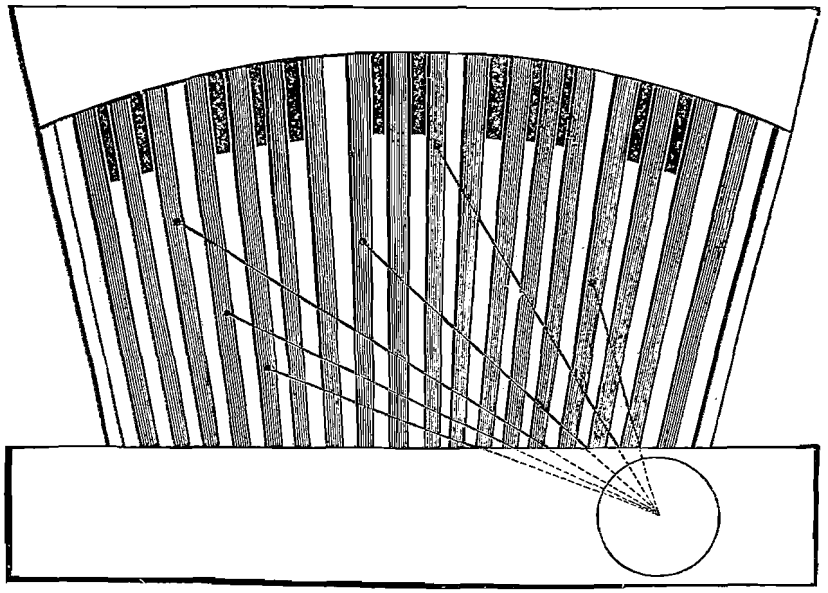


FIG. 36.—Measurements from right-hand side.

76. The knees should as far as possible, when playing in the centre as well as at the extremities of the pedal-board, *remain over the feet as they move.*

77. When the sign ▽ is placed *over* a note, that note is to be played with the *right toe.* When the same sign △ is placed *under* a note, that note is to be played with the *left toe.*

When the sign ○ is placed *over* a note, that note is to be played with the *right heel.* When the same sign ○ is placed *under* a note, that note is to be played with the *left heel.*

METHOD OF PEDALLING WITHOUT LOOKING AT THE FEET.

78. Having taken a proper position on the organ-seat as described in section 68, page 36, the student should now learn the system of finding different notes on the pedals by *feeling with his toes.* This is done by discovering the gaps between the short keys, corresponding exactly to the open spaces at the back of the white keys of a pianoforte between B♭ and C♯ and E♭ and F♯. The position of these spaces is shown by U, V, W, X, Y, Z in the following (Fig. 37):—

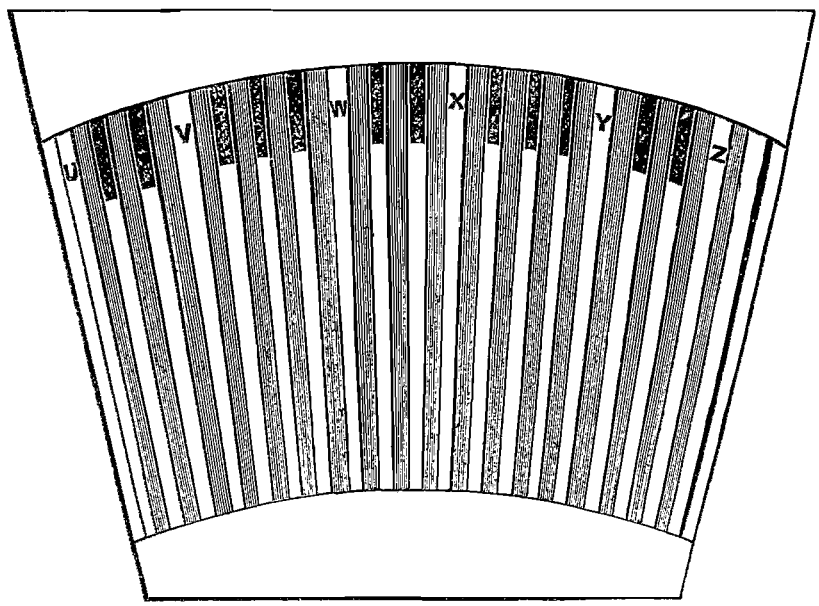


FIG. 37.

It will be seen that when the foot is thrust into V, the flat of the foot will be over the extreme ends of the keys E and F; when into W over B and C; when into X over E and F, and so on.

Having drawn some 16-feet pedal-stops and coupled the Great (up to Principal) to the pedals, the pupil should be asked to find the gaps and *place his foot in them* without causing the pipes to speak. Thus:—

Find Y with the right foot. (Prove it by making B♭ or C♯ to speak.)

Find V with the left foot. (Prove it by touching F♯.)

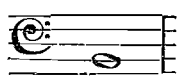
Find X with the right foot. (Prove it by touching E♭ or F♯.)

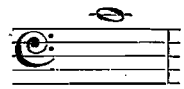
Find Z with the right foot. (Prove it by touching E♭.)

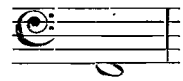
Find U with the left foot. (Prove it by touching C♯.)

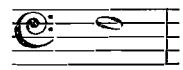
Find W with the left foot. (Prove it by touching B♭ or C♯.)

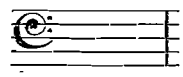
When the pupil has become quite familiar with the process of finding these spaces he may proceed to find the notes lying near them and make them sound, placing his foot firmly on the pedal keys. Thus:—

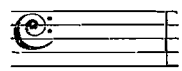
Find W with the left foot. Then, after *feeling the sides of the short keys* B♭ and C♯, draw the foot out and strike  firmly and without any hesitation, making it sound freely.

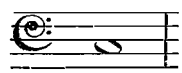
Find Y with the right foot, then strike 

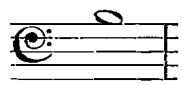
Find V with the left foot, then strike 

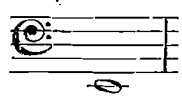
Find X with the right foot, then strike 

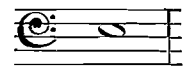
Find U with the left foot, then strike 

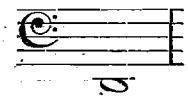
Find Z with the right foot, then strike 

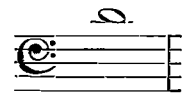
Find W with the left foot, then strike 

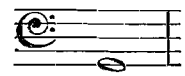
Find Y with the right foot, then strike 

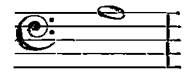
Find V with the left foot, then strike 

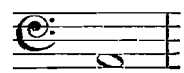
Find X with the right foot, then strike 

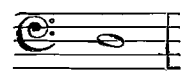
Find U with the left foot, then strike 

Find Y with the right foot, then strike 

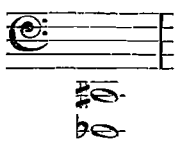
Find V with the left foot, then strike 

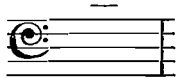
Find Y with the right foot, then strike 

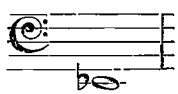
Find W with the left foot, then strike 

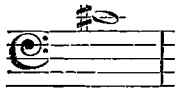
Find X with the right foot, then strike 

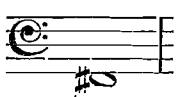
It will be found that the position of the short keys is discovered with great ease by this method.

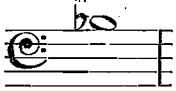
From U find  with left foot.

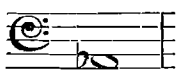
From Z find  with right foot.

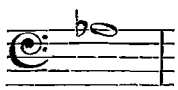
From V find  with left foot.

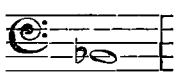
From Y find  with right foot.

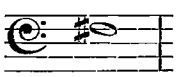
From V find  with left foot.

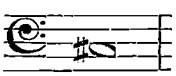
From Y find  with right foot.

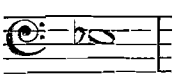
From W find  with left foot.

From Y find  with right foot.

From W find  with left foot.

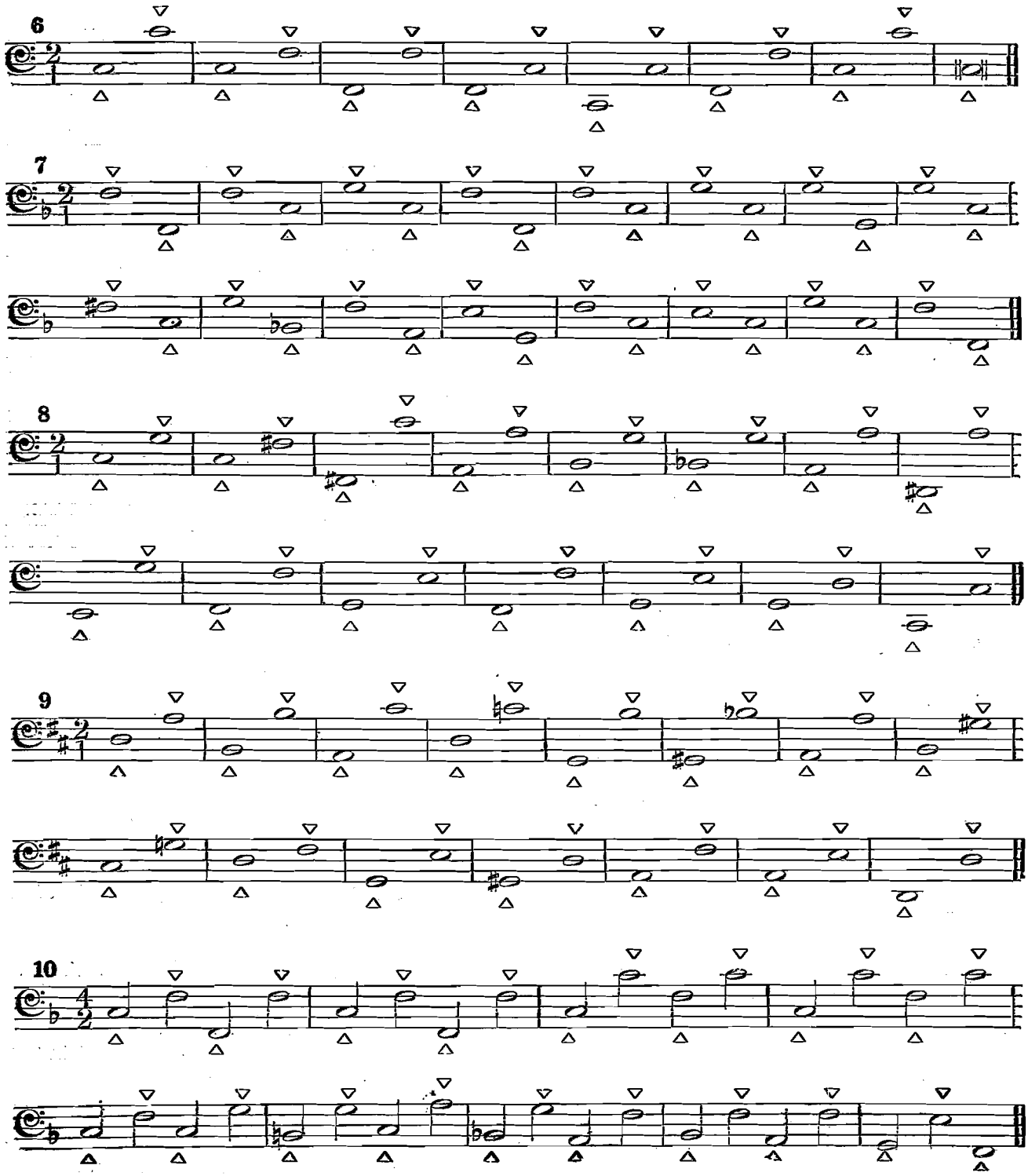
From X find  with right foot

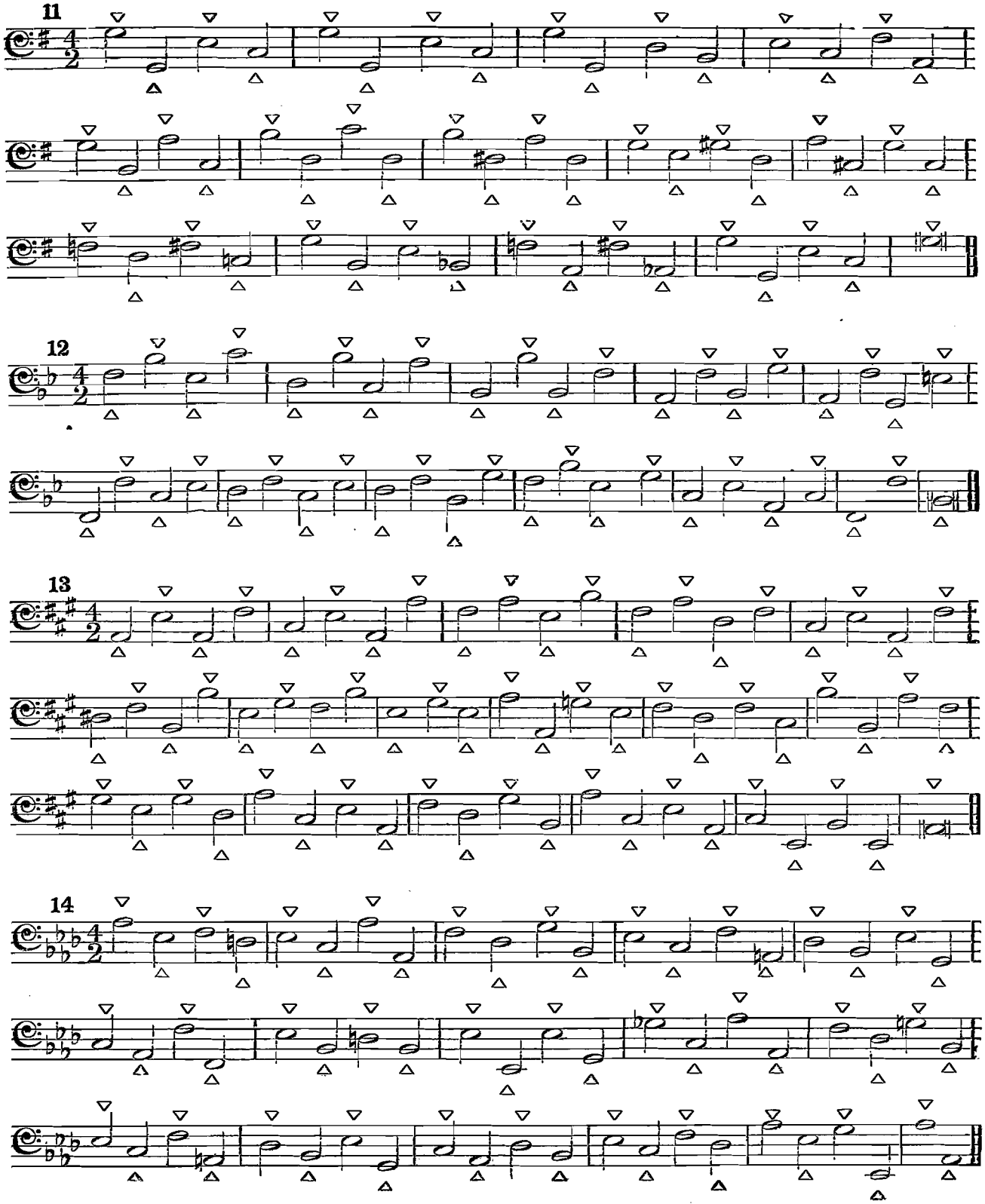
From W find  with left foot.

From X find  with right foot.

This method of feeling for the whereabouts of notes is exactly that pursued by a blind man on his commencing to play on the manuals. He feels for the spaces between the black keys and thus gets his bearings. Having no eyes in our toes, we cannot do better than adopt this very natural system of discovering the locality of the pedal-keys required.

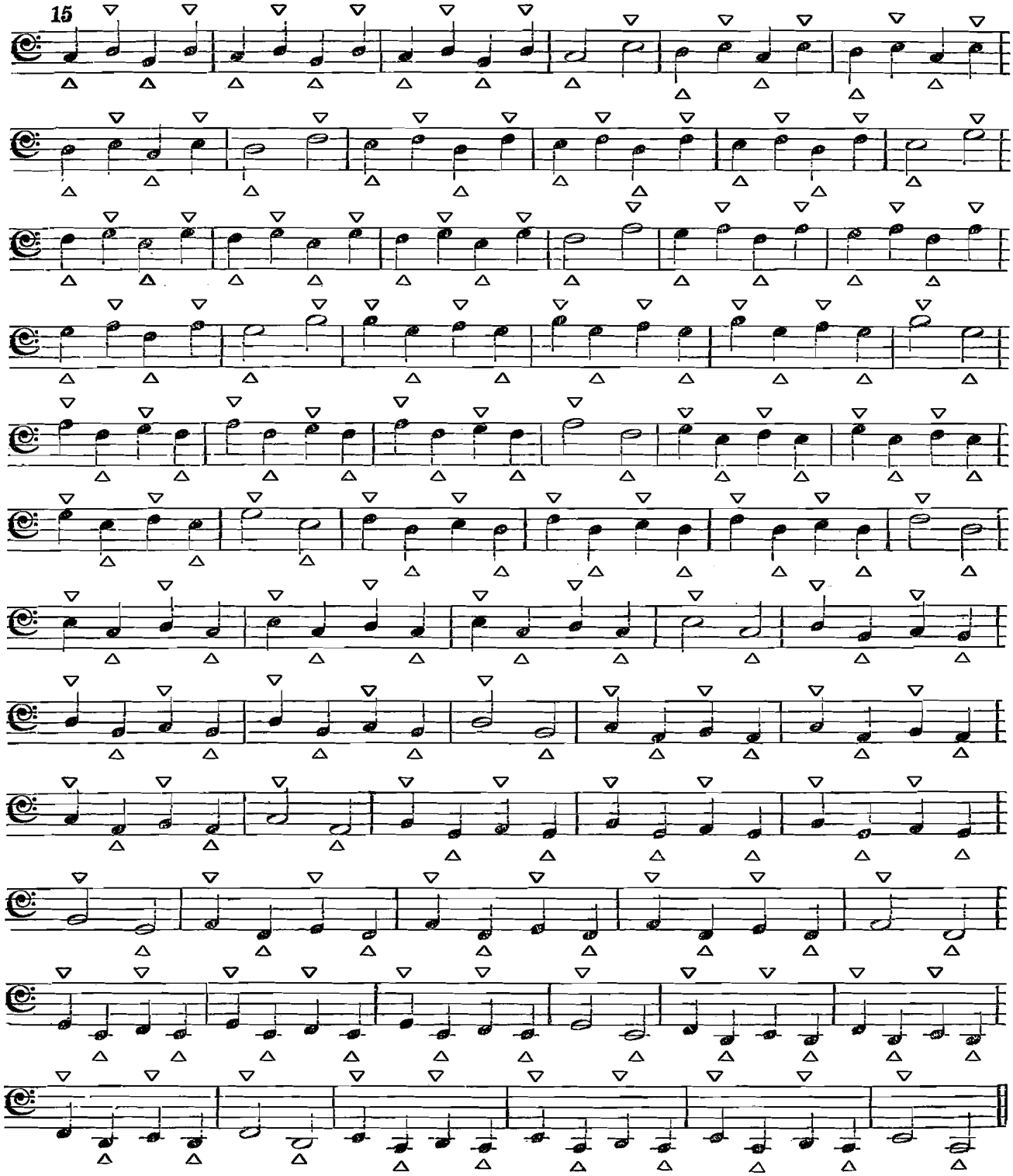
EXERCISES FOR FINDING PEDAL-KEYS BY FEELING WITH THE TOES, WITHOUT LOOKING AT THE FEET (*See* SECTION 78).




11
12
13
14

79. If the pupil can now place his foot on any pedal-key *without looking*, and without any hesitation, he may proceed to practise exercises for alternate toes, which will serve the double purpose of rendering his ankle-joint elastic, and of accustoming him to the measurement of intervals on the pedals.

15



80. The position of the toe on a sharp or flat pedal-key is shown in the following figure :—

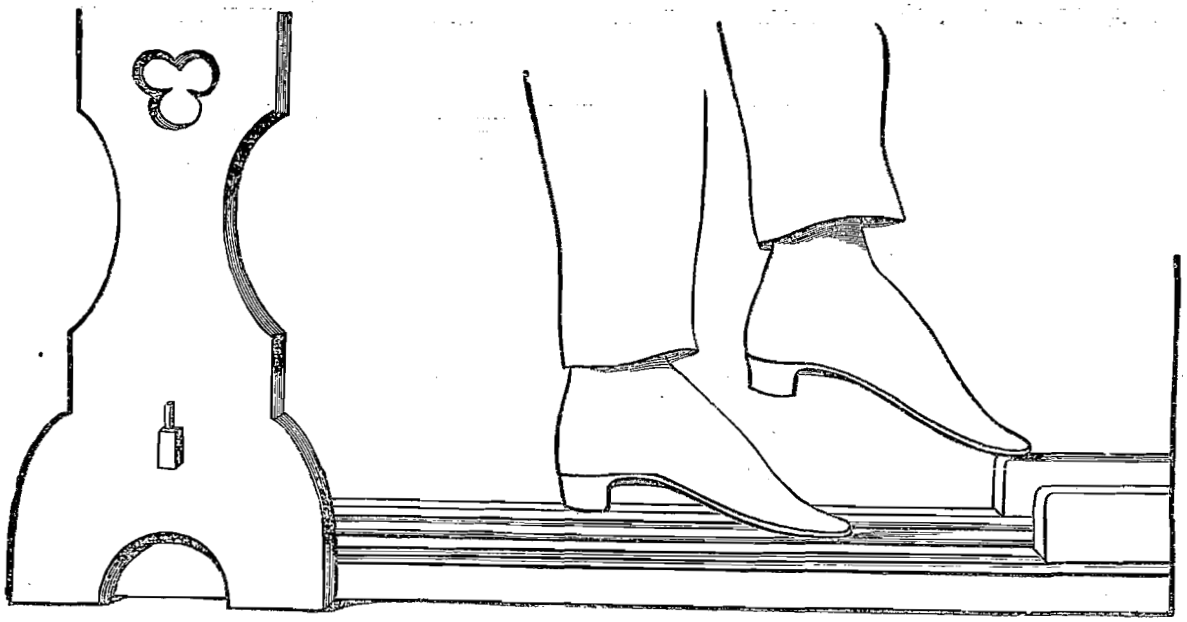


FIG. 38.

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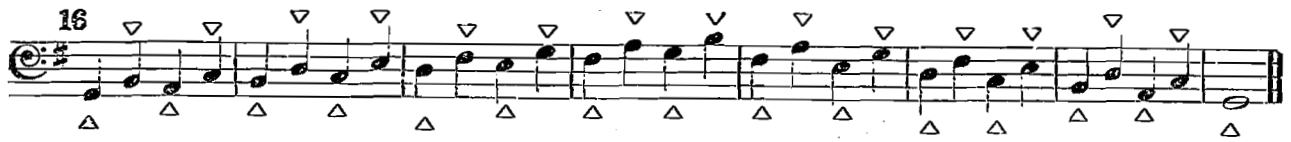

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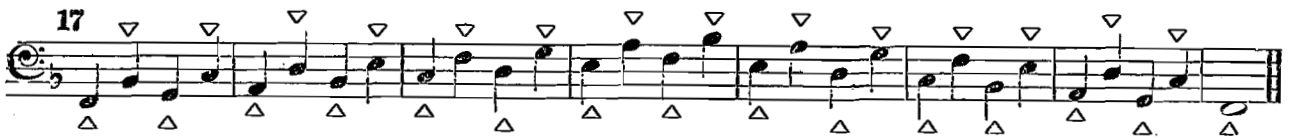

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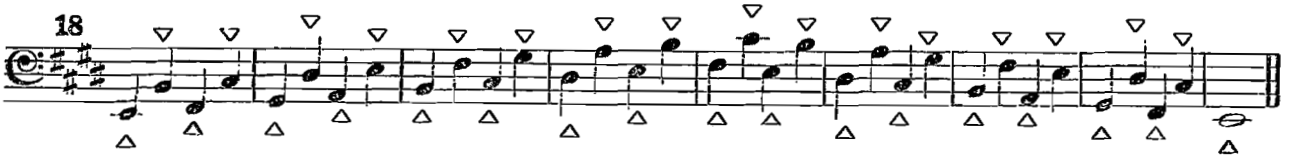

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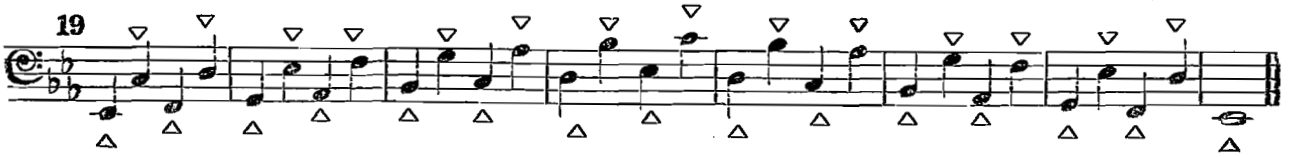

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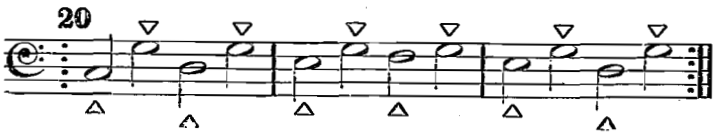

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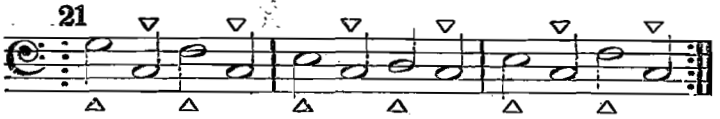

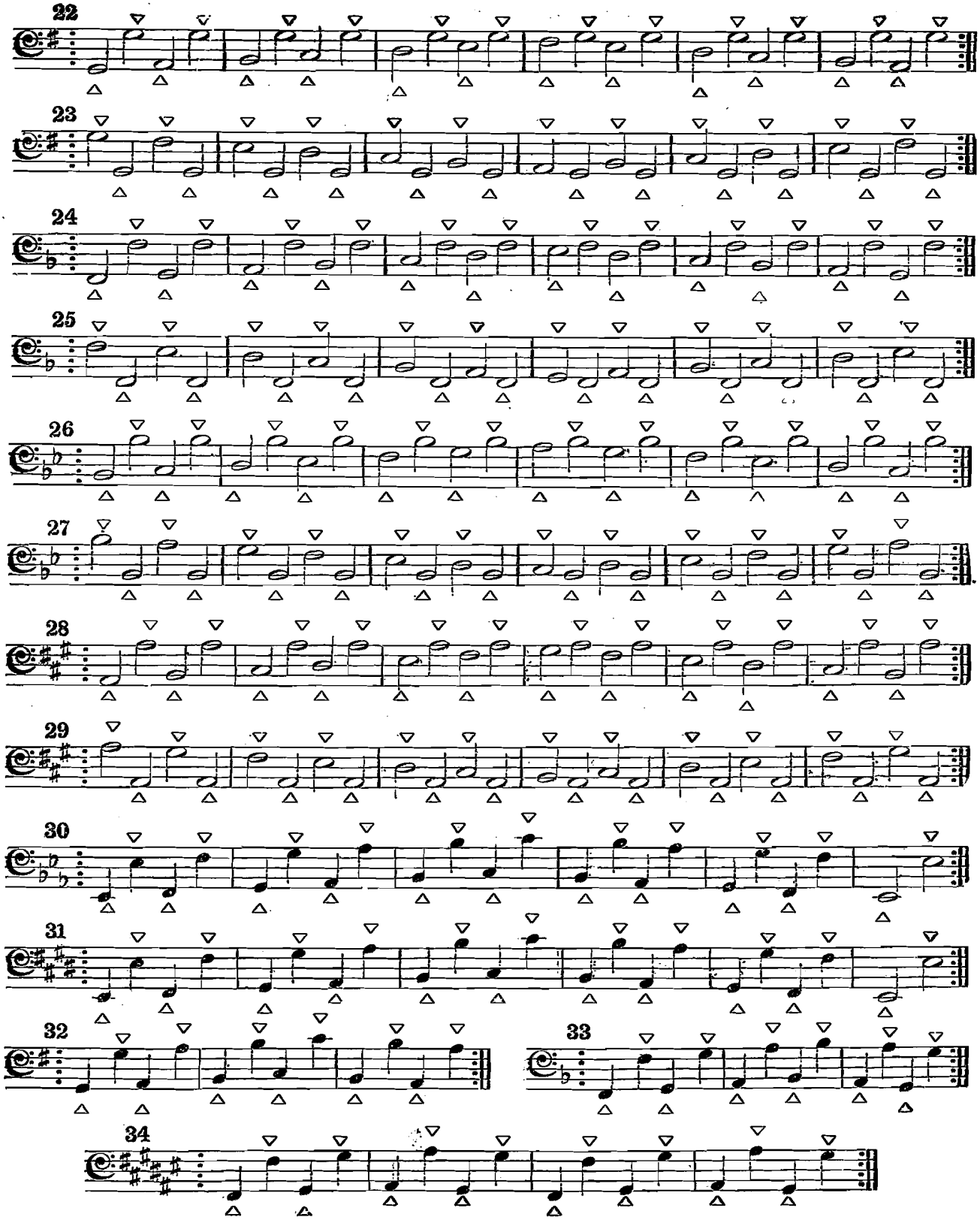
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81. It is now time to study the manual-touch of an organ, and notice in what respect it differs from that of a pianoforte.

In the first place, an organ-key is rapidly *pressed* down, not exactly *struck*, as on the pianoforte. The key should nevertheless be pressed down with firmness and decision.

Next, no alteration as to loudness or softness is produced by the force used by the finger. In organ-playing a quite uniform touch is employed in *forte* and *piano* passages, or, in other words, the keys are touched by the fingers when only one soft stop is drawn, *exactly in the manner as if the full power* of the instrument were to be brought out. To do this habitually will require constant care and attention.

Two different sorts of "touch" will be found on organs. One, when the *key itself* is the actual lever which works the mechanism connected with it; the other, when the key only lifts a valve in the pneumatic bellows, and throws the actual leverage on to that contrivance. (Hence called the pneumatic *lever*.)

But the object of the player, when playing on either of these two kinds, remains the same, namely, to throw open the pallets in true response to his finger as regards *time*, and also to throw them open so thoroughly and rapidly that the wind shall not, as it were, *sneak* into the pipes and spoil their tone.

The former of the above "touches," namely, that in which there is *no* pneumatic lever between the key and the mechanism, will be found to vary in weight to an extent which gives great annoyance even to an experienced performer; and, moreover, when one row of keys is *coupled* to another, an almost new kind of touch, sometimes very heavy, is temporarily formed.

It frequently happens that (on an instrument having two, three, or four manuals) a different kind of touch is found on each manual. A good organist, if he has to use all the manuals in turn, insensibly plays on *all* with the weight or force required for the *heaviest one of them*. Hence the saying: "Adjust your touch to the heaviest row." Where an organist is constantly playing on the same instrument and has become quite familiar with it, he can afford to disregard this rule; but when playing in public on a *strange* instrument it will be well to bear it in mind, because, if the player should try and play a rapid scale-passage on the heaviest (not being prepared for the change), he is very likely to pass over some keys without getting any sound.

82. In organ-playing the back of the hand does not lie quite so flat as in pianoforte-playing. See Fig. 39. This is partly owing to the fact that very often considerably more pressure has to be used, as, for instance, when playing full chords on a specially heavy touch; partly to the fact that hands have to cross and recross each other when playing on two different manuals; and also, one hand may have to go just below the other for the purpose of pressing in one of those clever and invaluable contrivances called "pneumatic combination pistons."

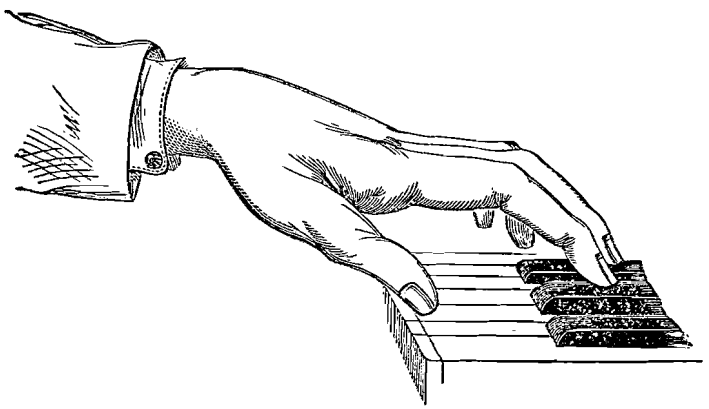


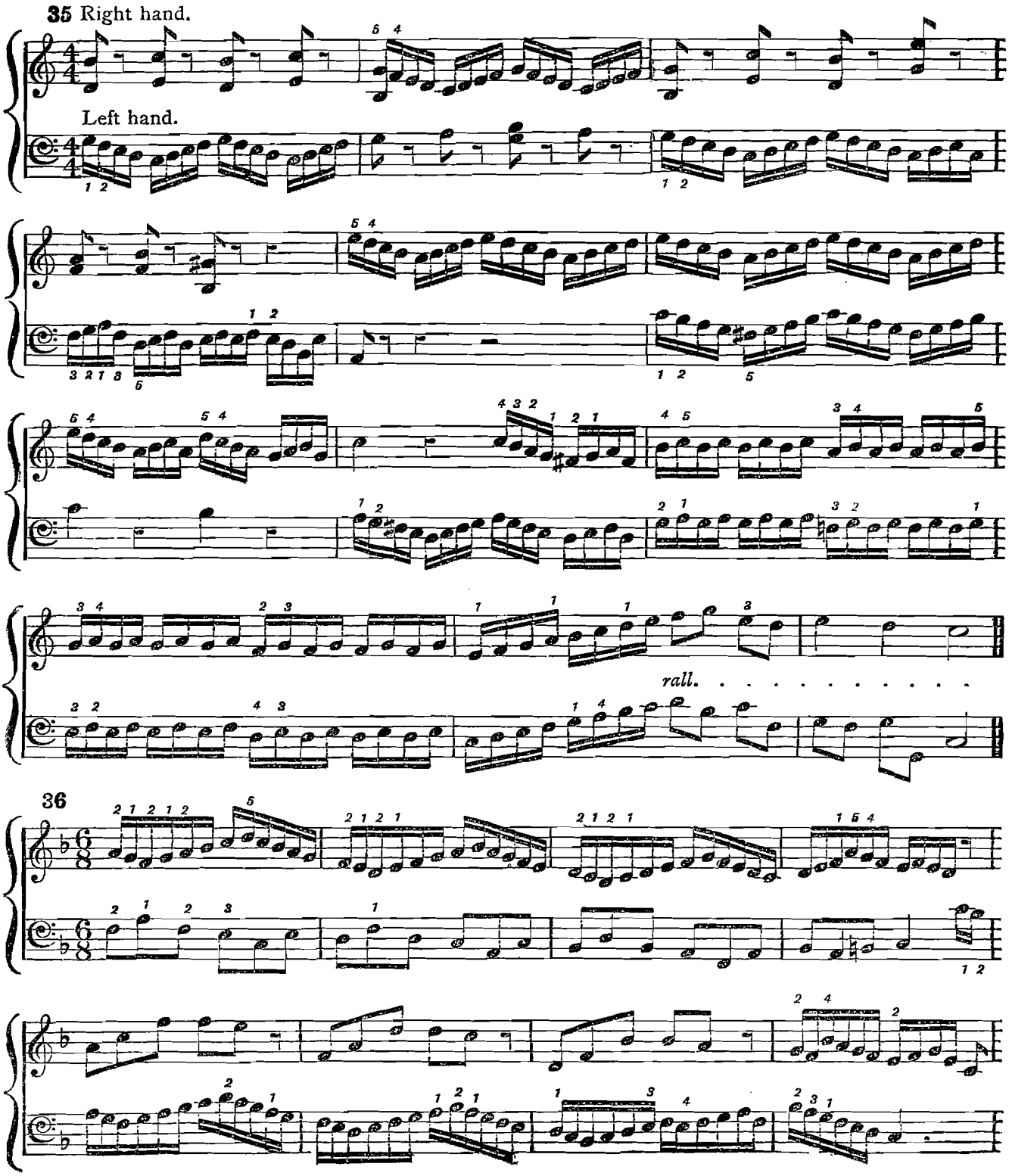
FIG. 39.

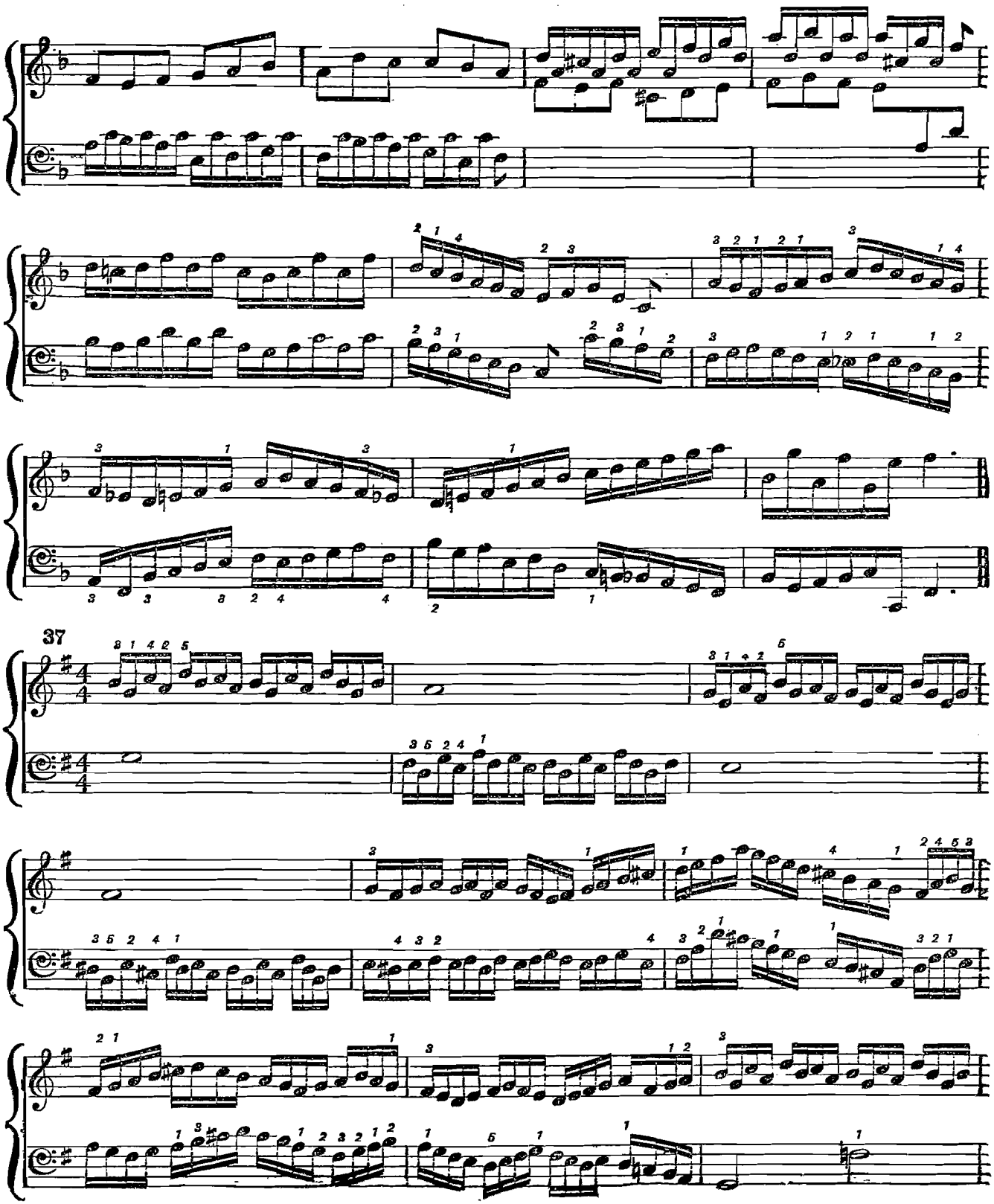
83. The fingers should press down the keys to the very bottom with a sharp *springy* motion, the action being from the knuckle-joints. The back of the hand should remain in its position, and not on any account be allowed to jump up and down with the movement of the fingers.

84. As the keys of an organ generally sink deeper than those of a pianoforte, it will be found necessary to raise the fingers rather high, *after* they have pressed down the keys. But they should not be raised so high as to give the feeling that the keys are being *hit* when the fingers *next* go down, but only *pressed down* with decision and firmness.

85. The pupil should be very careful not to stick out the elbows; it is never necessary to do so, and always ugly.

EXERCISES ON MANUAL TOUCH.

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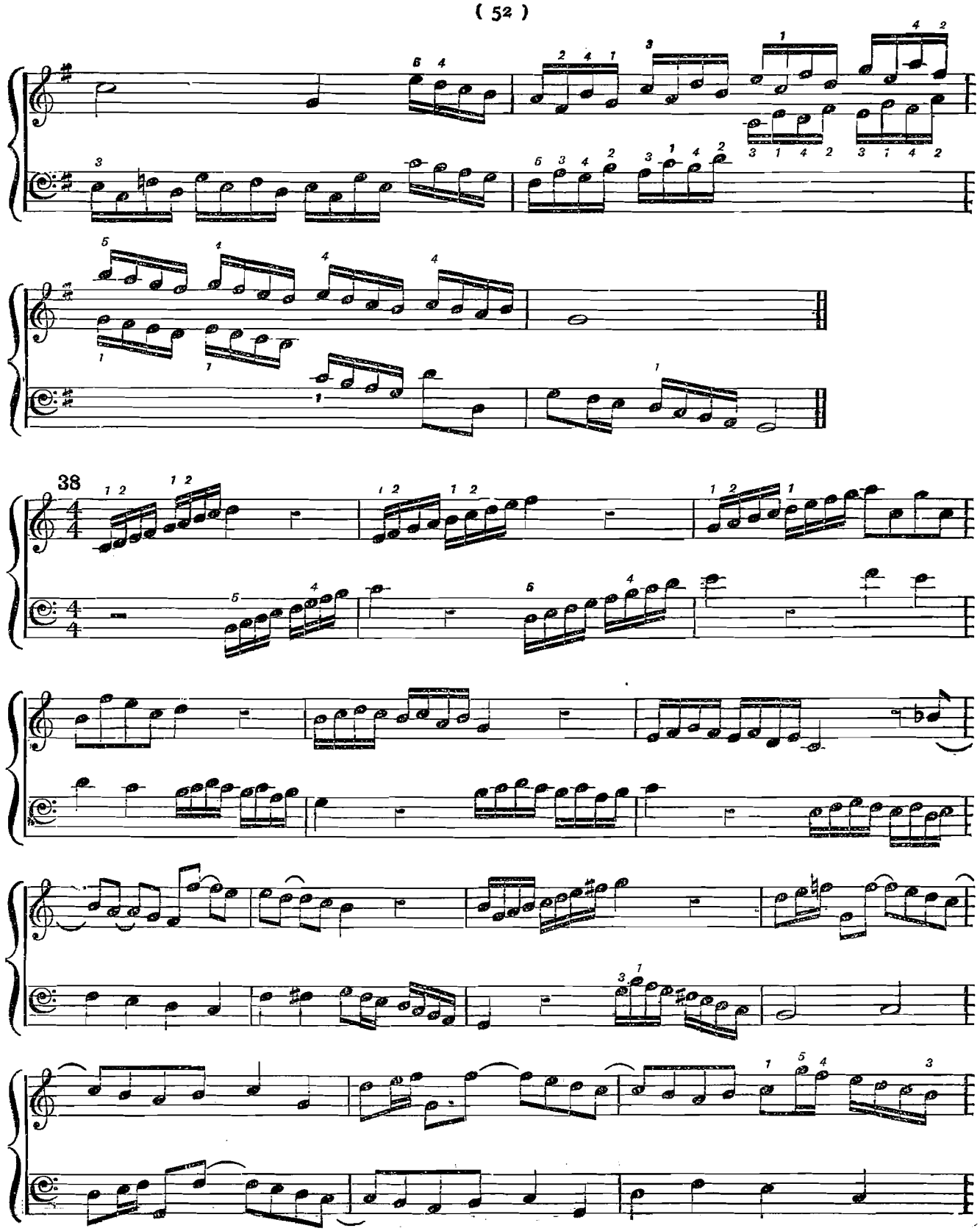
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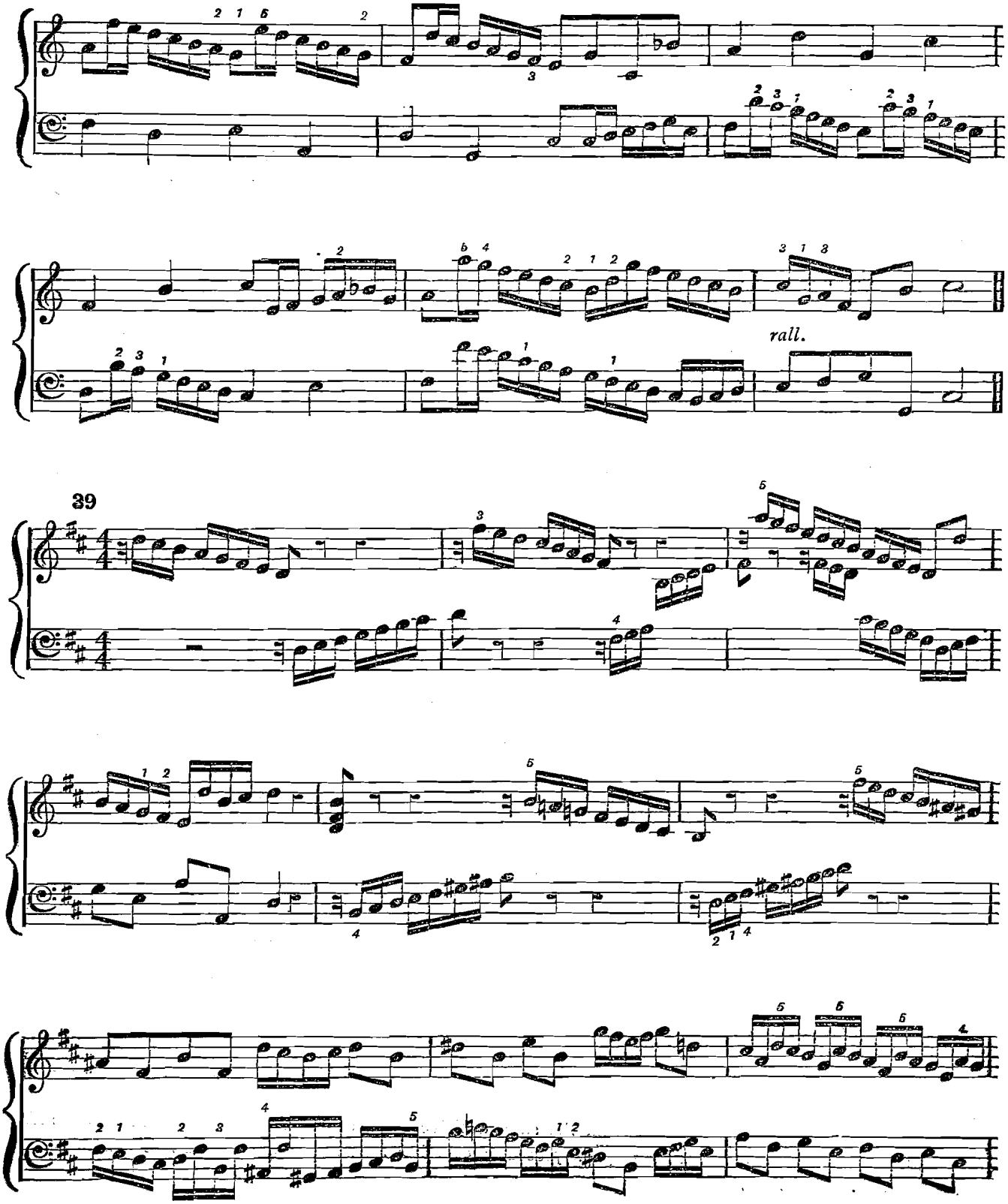
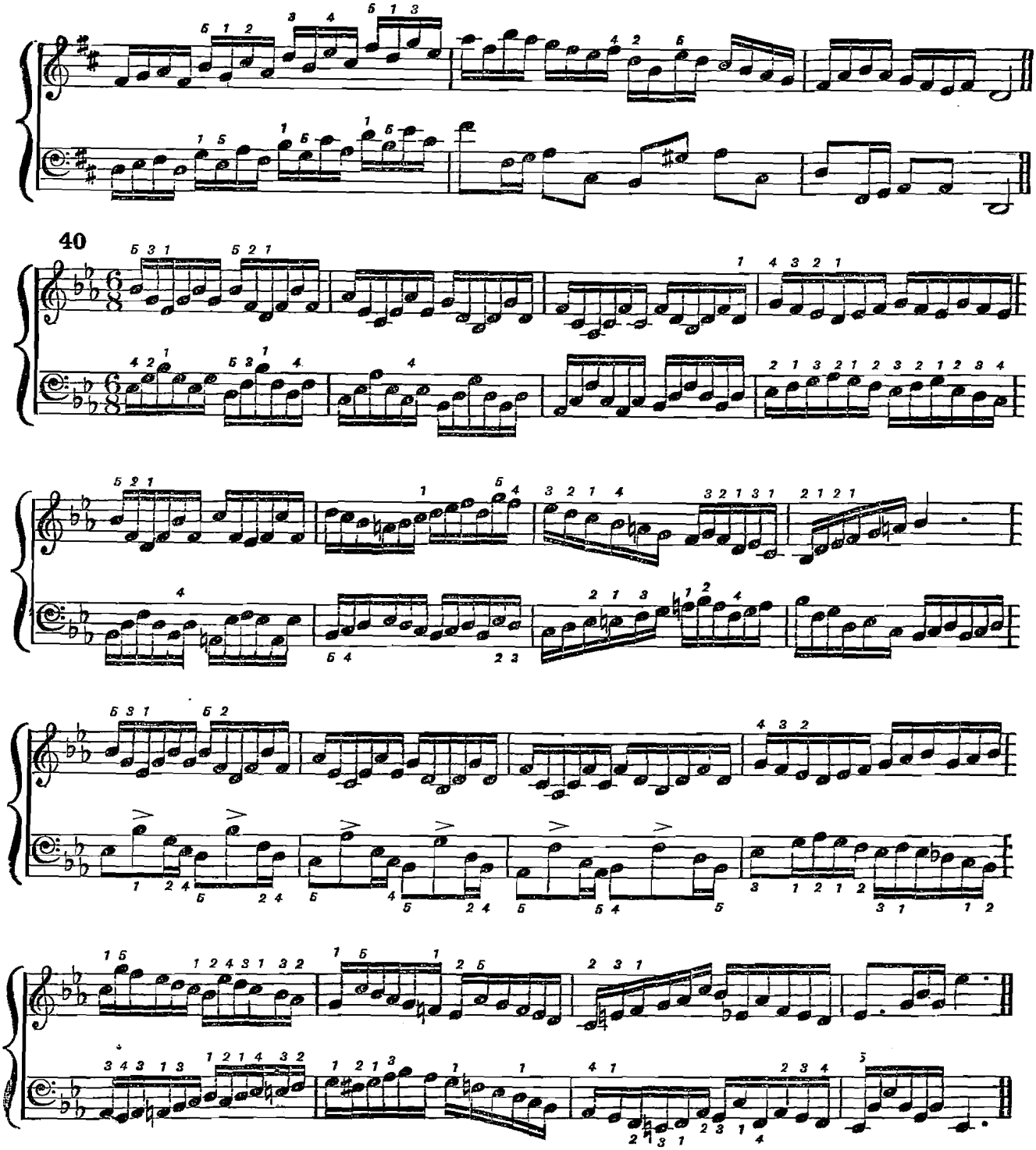

39
rall.



86. As it is of great importance that the same decisive touch should be used for both loud and soft passages, the student is recommended to play the preceding exercises alternately on loud and soft combinations and on different rows of keys.

SCALE-PASSAGES ON PEDALS.

87. In playing scales on the pedals the various methods of pedalling mentioned in section 70, page 37, are generally used separately or in combination as found most convenient in each special case. Some scales are therefore pedalled entirely with "alternate toes," some with a mixture of "toe and heel" and toes, others entirely with "toe and heel." When the feet cross each other as in playing scale-passages with alternate toes, the heel of the foot in front must be raised sufficiently to allow the other foot a clear space in which to pass it, thus :—

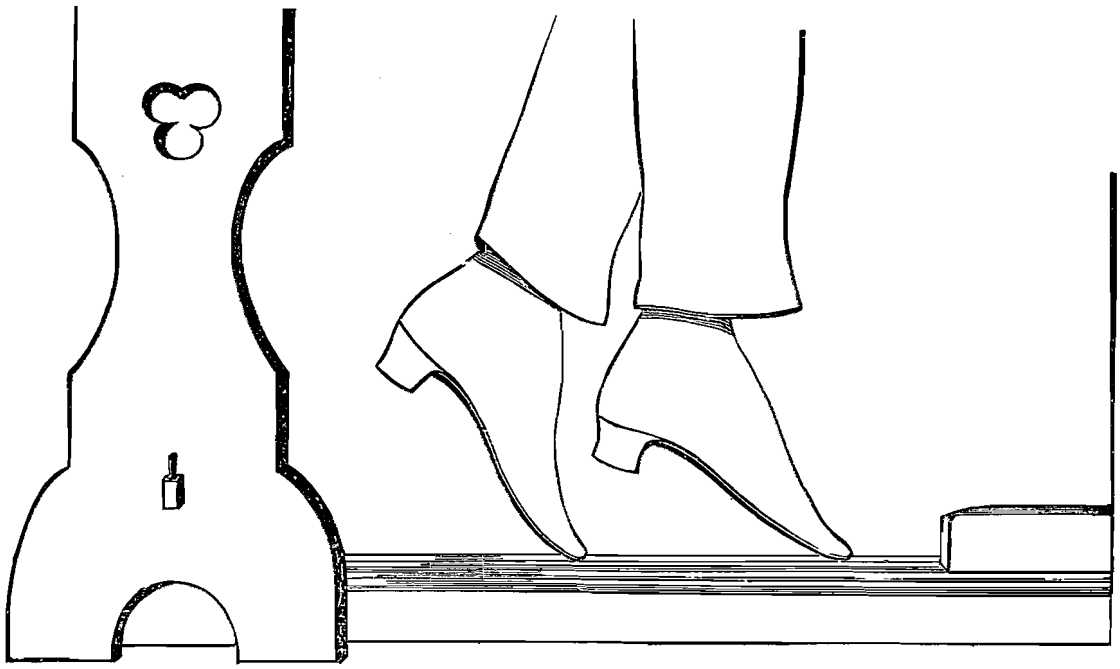
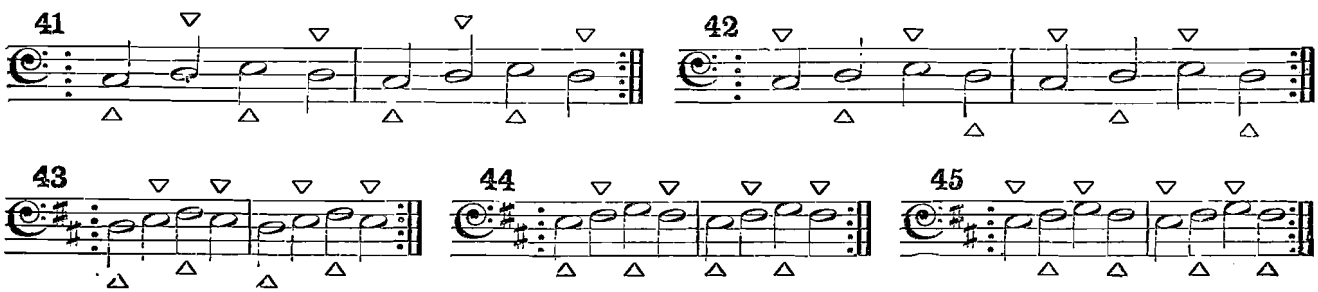


FIG. 40.

88. It is of the utmost importance that a good *pedal-touch* should be acquired, because if the pedal-keys are not put down lightly, yet firmly and with decision, the large pipes speak in such an irregular and unsatisfactory manner as to entirely spoil the effect of the performance. This is specially true with regard to reed-stops.

The following exercises show how one foot must be passed behind another for a natural (long) key after a short key; round the front of the other for a sharp (short) key after a long key :—



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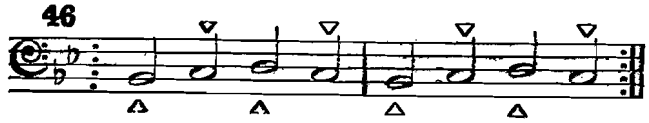

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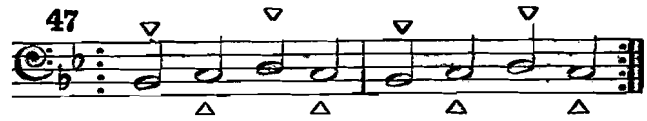
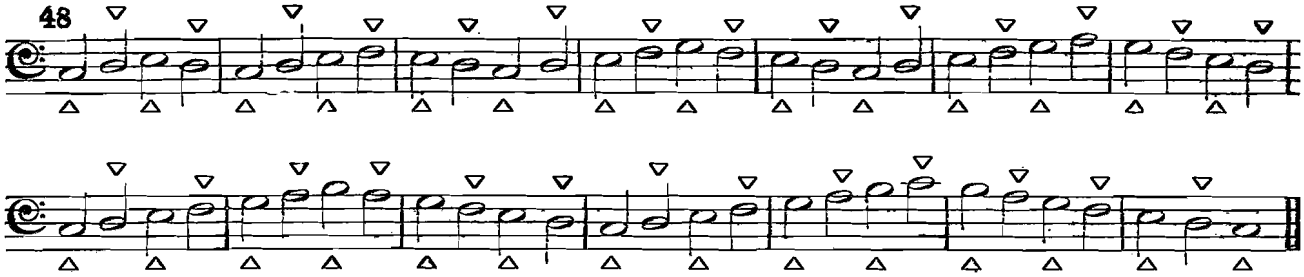


SCALE PASSAGES FOR ALTERNATE TOES.

48



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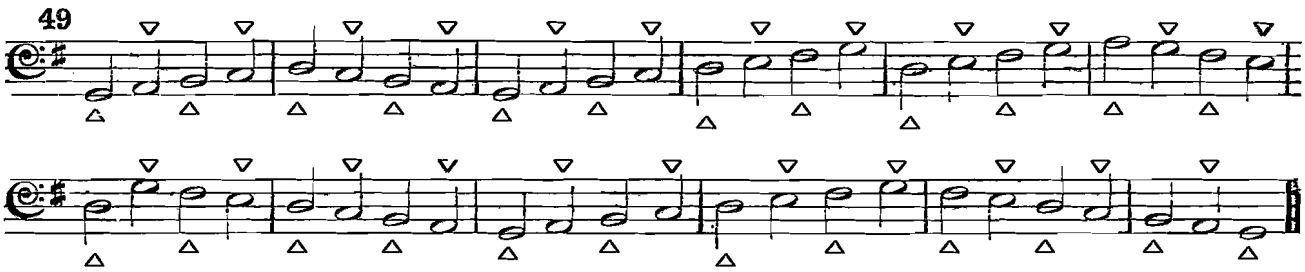

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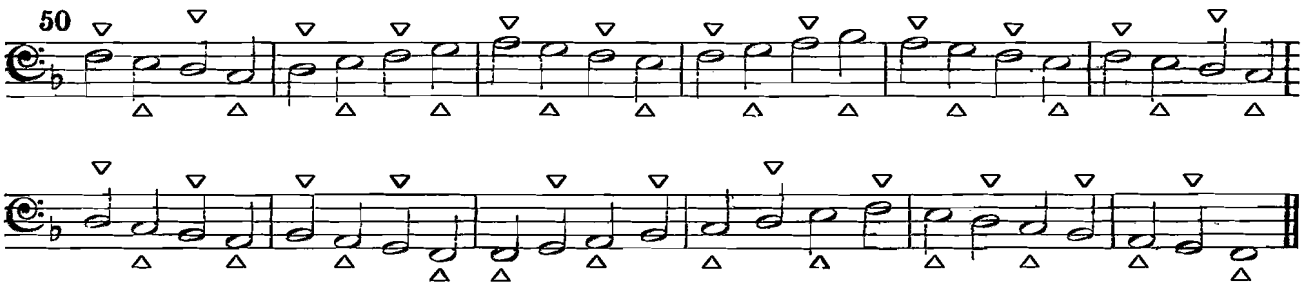

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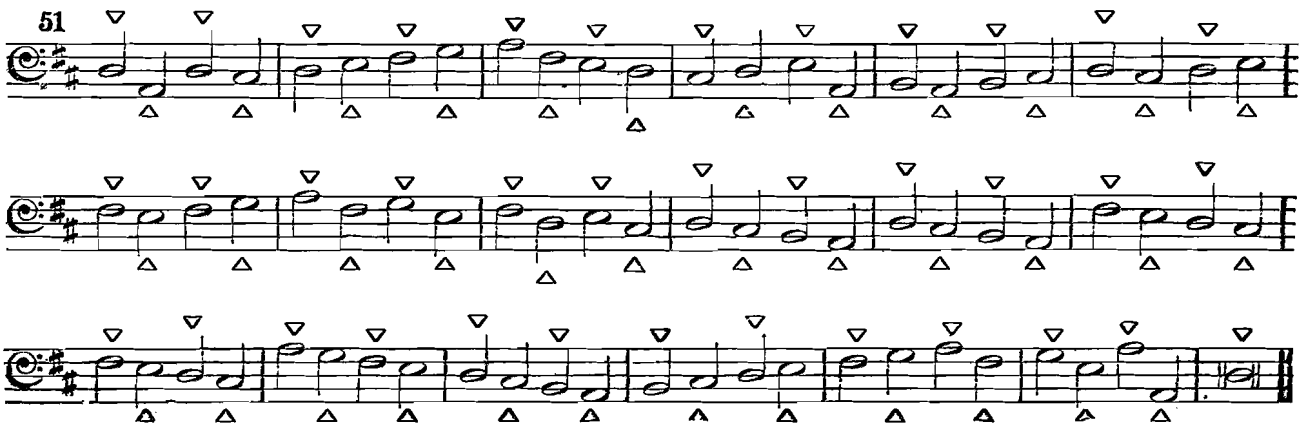

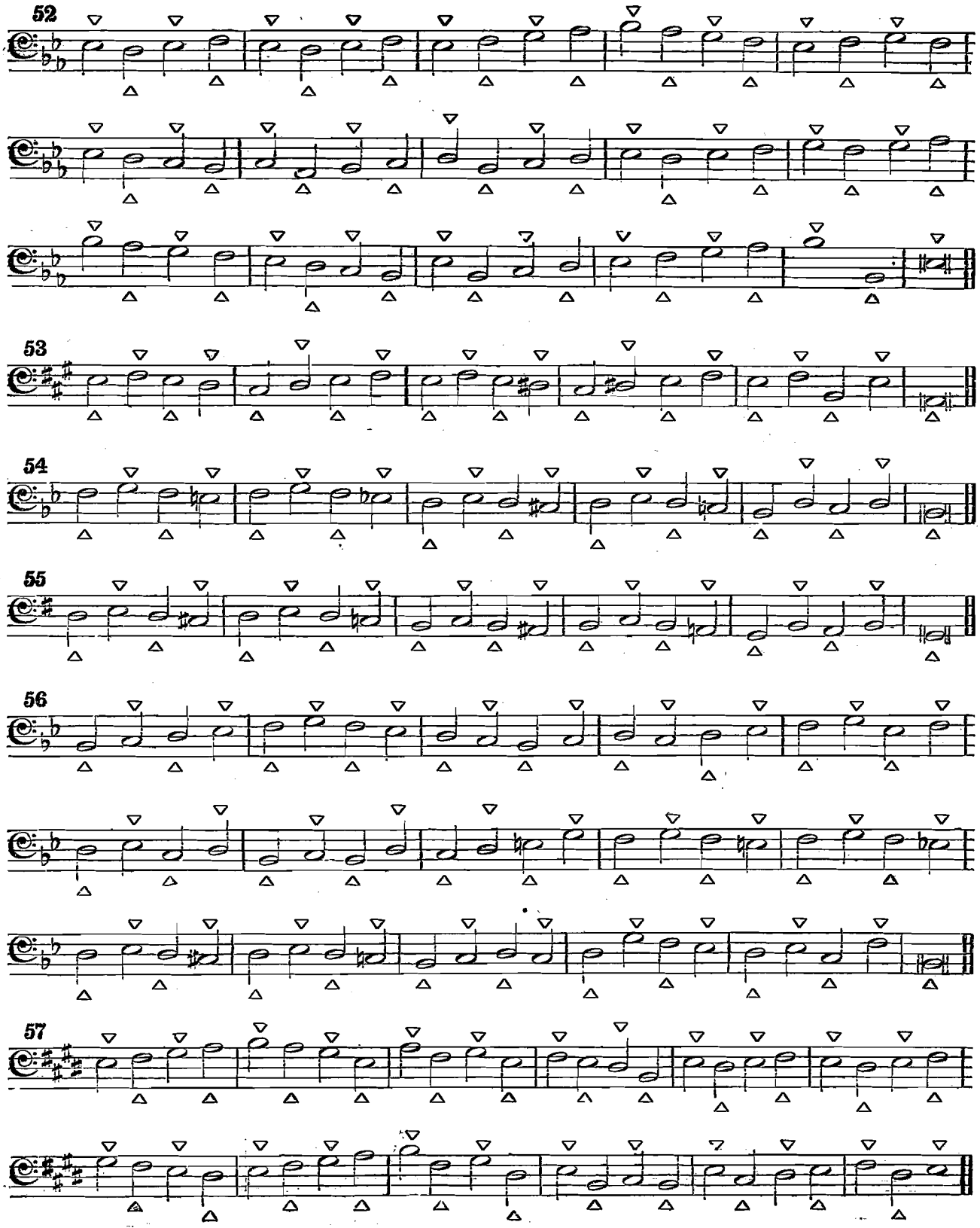
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INDEPENDENCE OF HANDS.

89. As the hands more frequently are *crossed* in playing the organ than the pianoforte, special attention must be directed to the exercises for teaching independent movement of the hands.

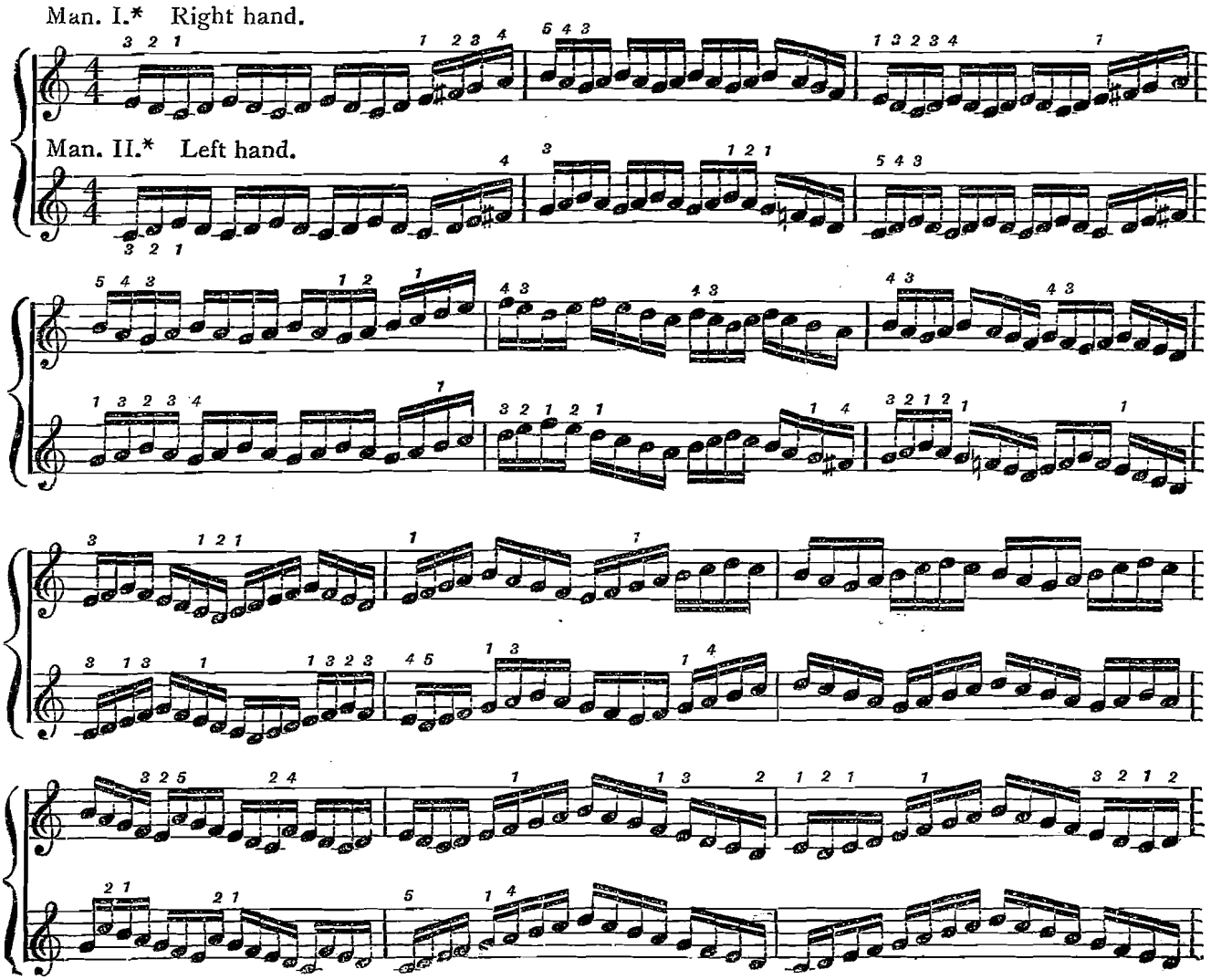
90. On the organ—that is to say, an organ with two or more manuals—many beautiful effects can be produced by using the hands on two different manuals having tones strongly contrasted in *quality*, though equally balanced as possible with regard to *quantity* of sound. Every time passages are then made to cross each other, both parts remain pure and distinct.

91. Great pains should be taken to make the hands strike the keys *precisely* together. The sounds produced should be quite *clear*, but not *staccato;* free from what is very expressively called *smearing*, yet quite *legato*.

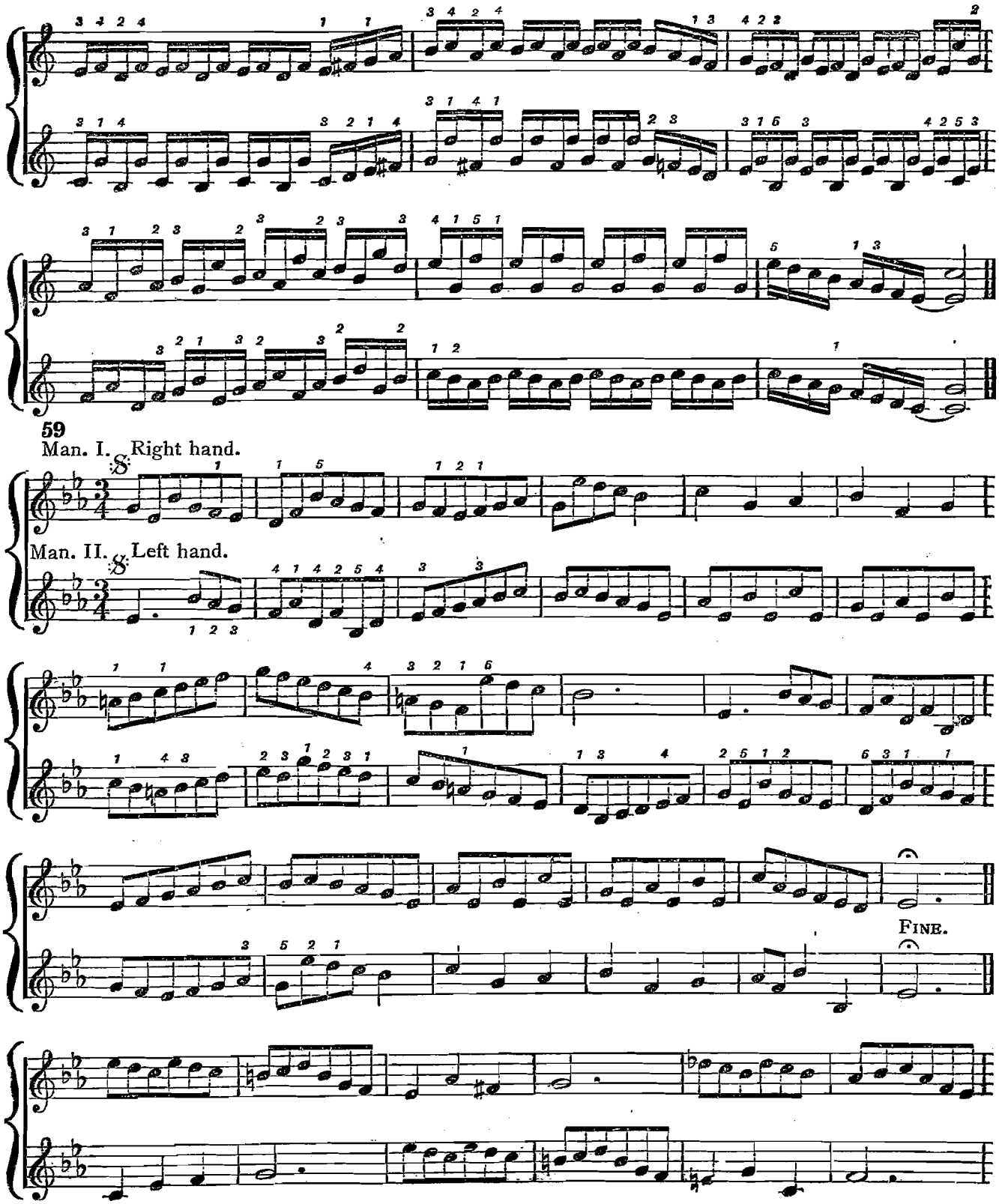
It should be observed that the wrist is held a little higher than in pianoforte-playing (as before stated), so as to allow either hand to pass under the other, as the case may be, without any displacement of its position. A jump of one hand to allow the other to pass under it not only looks bad, but often leads to the playing of wrong notes.

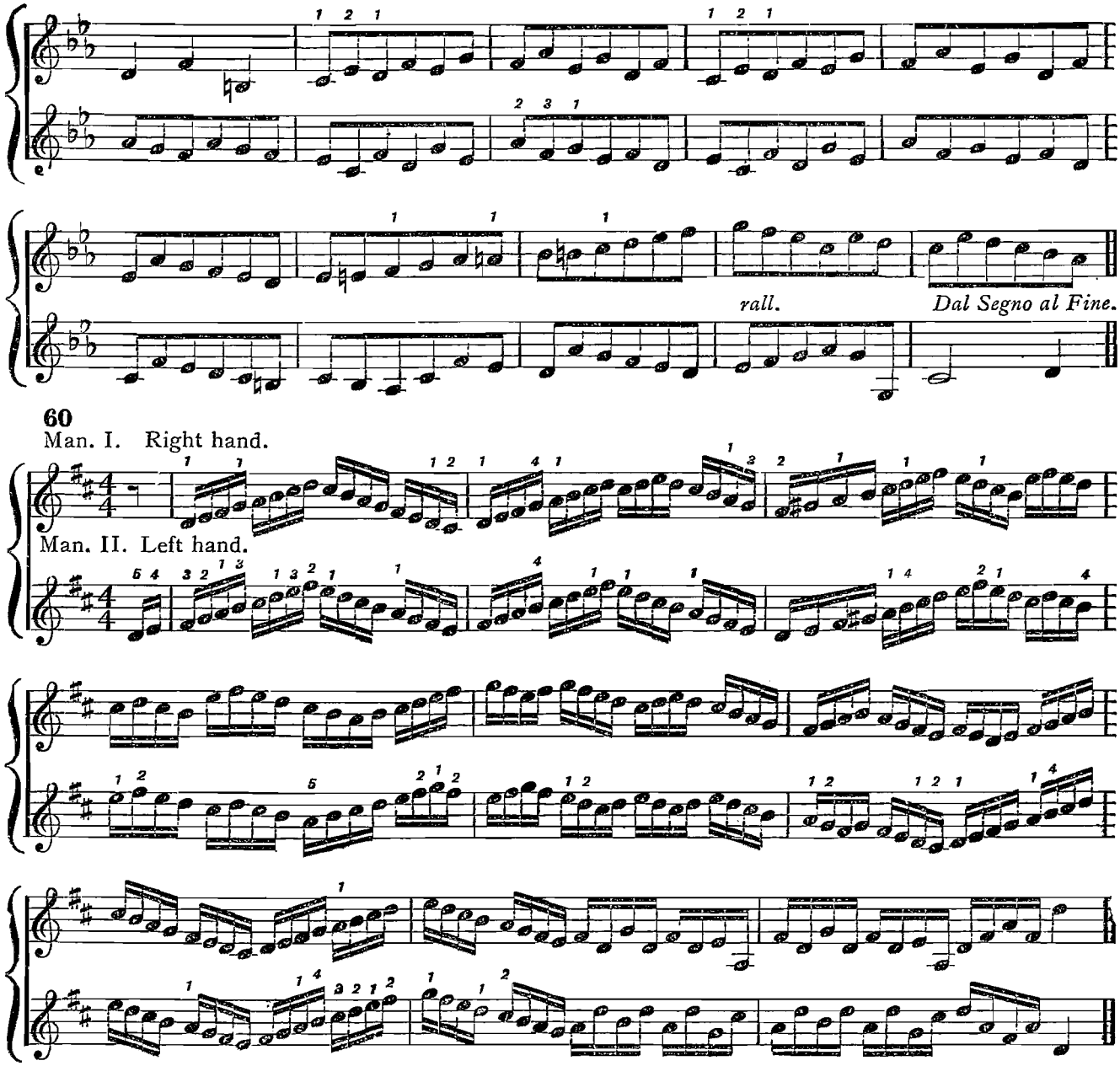
EXERCISES FOR THE PRACTICE OF INDEPENDENT MOVEMENT OF THE HANDS, ON TWO MANUALS.

58



* The order of the two manuals may be varied in each exercise, according to the teacher's discretion.—Ed.


59
Man. I. Right hand.
Man. II. Left hand.
FINE.



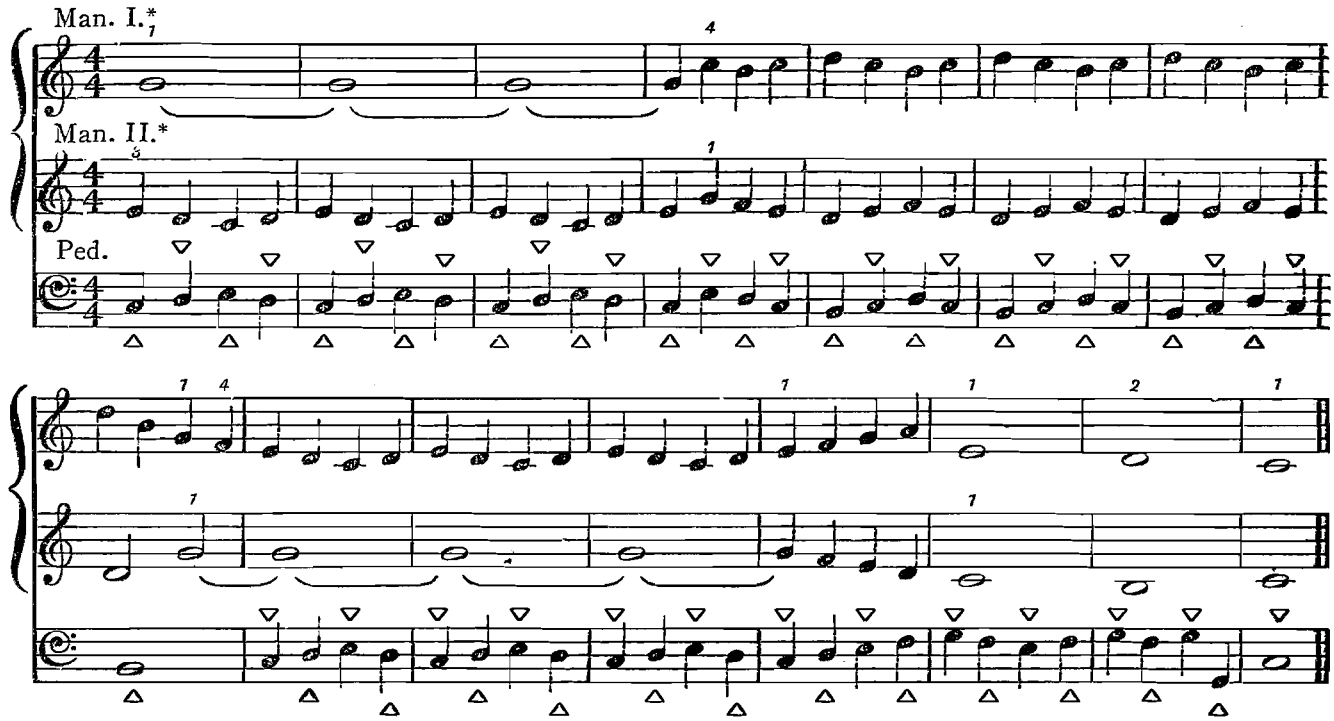
92. The pupil may now begin to play in three parts, one part being assigned to each hand, another to the feet. Of course this sort of playing will at first very much tax his attention and perhaps *patience*. But as it brings into prominence the essential characteristics of organ-playing, he will find his labour amply repaid by the ease with which he will at a later period unravel fugal knots of no small complication.

93. Special attention will be necessary to the next set of exercises, designed to give independence of action to both hands and feet.

Care must be taken that the finger and foot strike the keys and produce the sound exactly *together*. In bad organ-playing the pedal part often sounds as if it were a humble follower of the manuals, too diffident and nervous to rank with them. It need not be pointed out that such a fault in execution is fatal to all beautiful effects.

EASY EXERCISES FOR PRODUCING INDEPENDENCE OF HANDS AND FEET.

61



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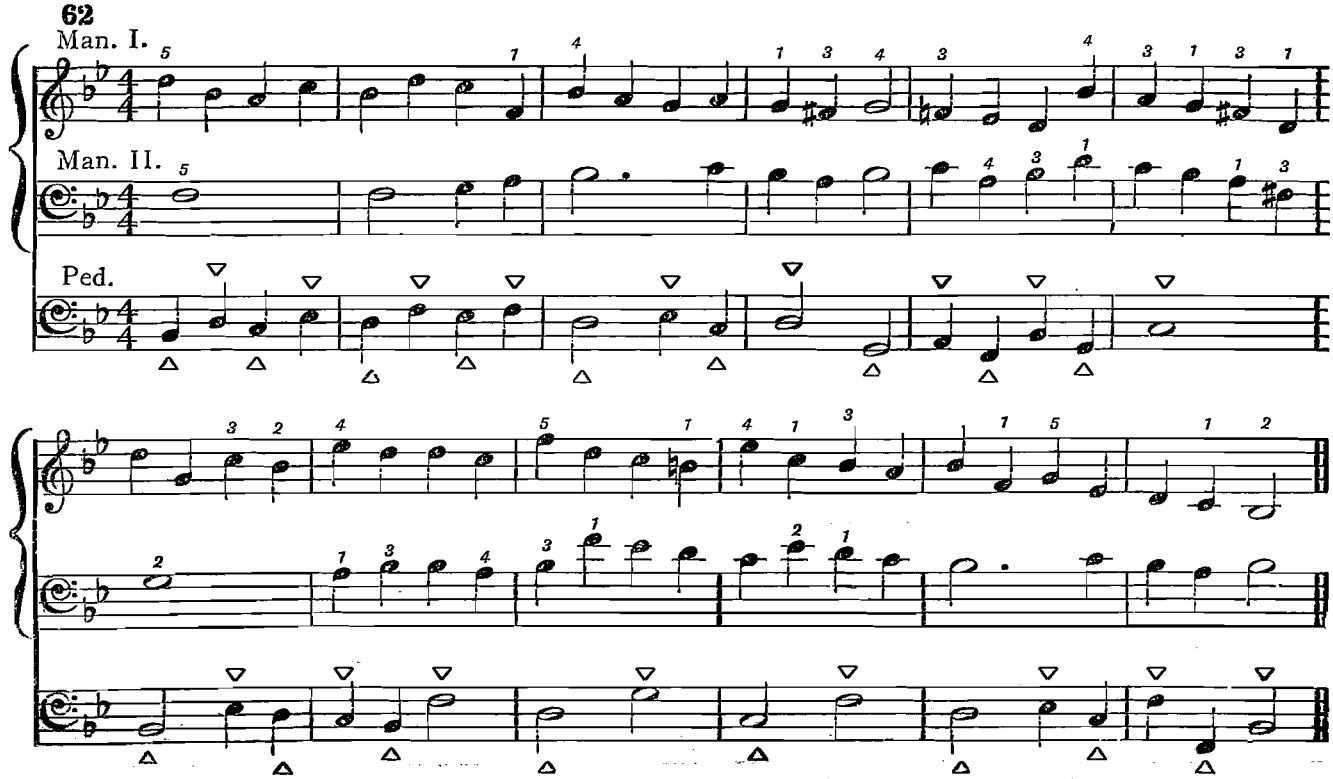
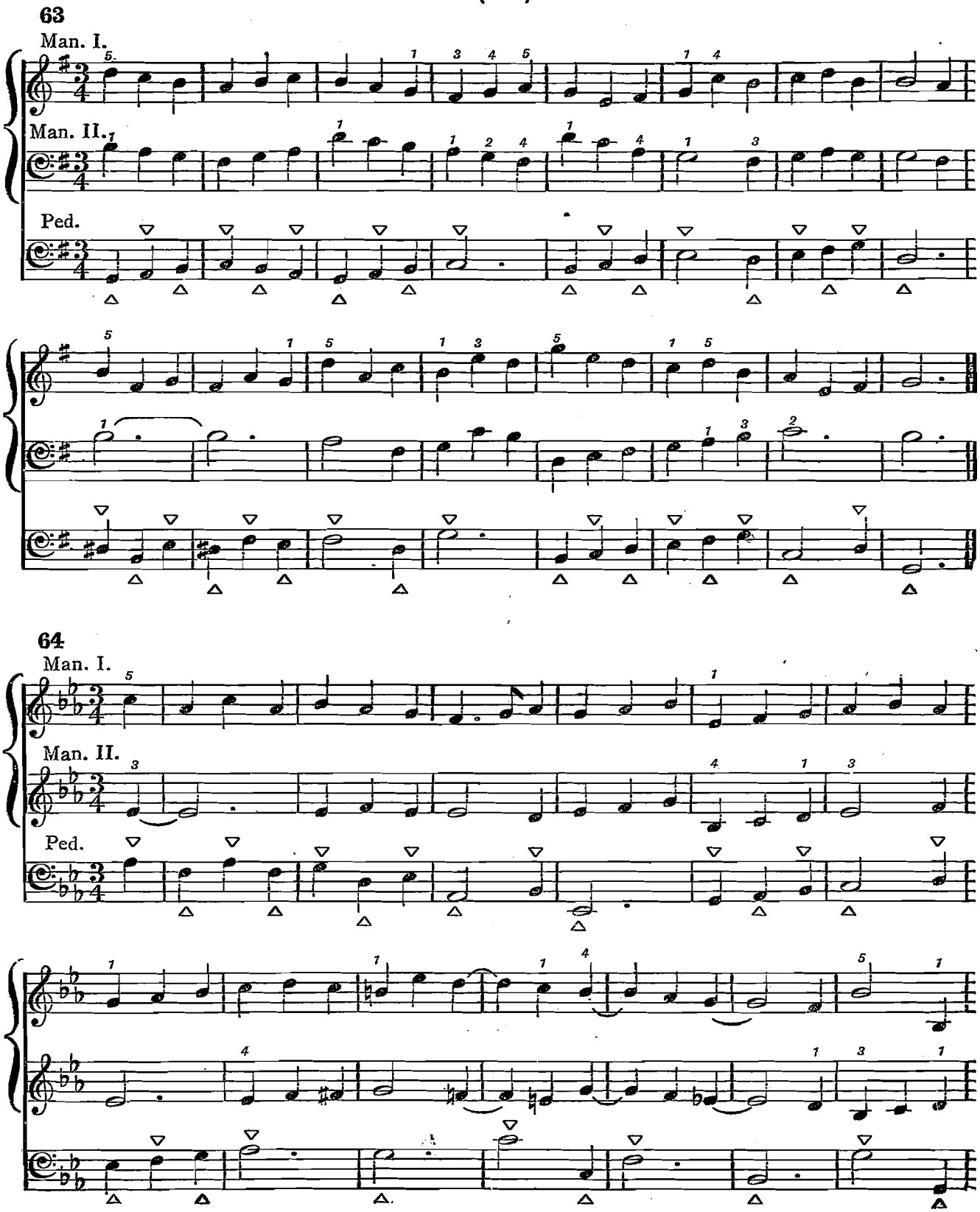
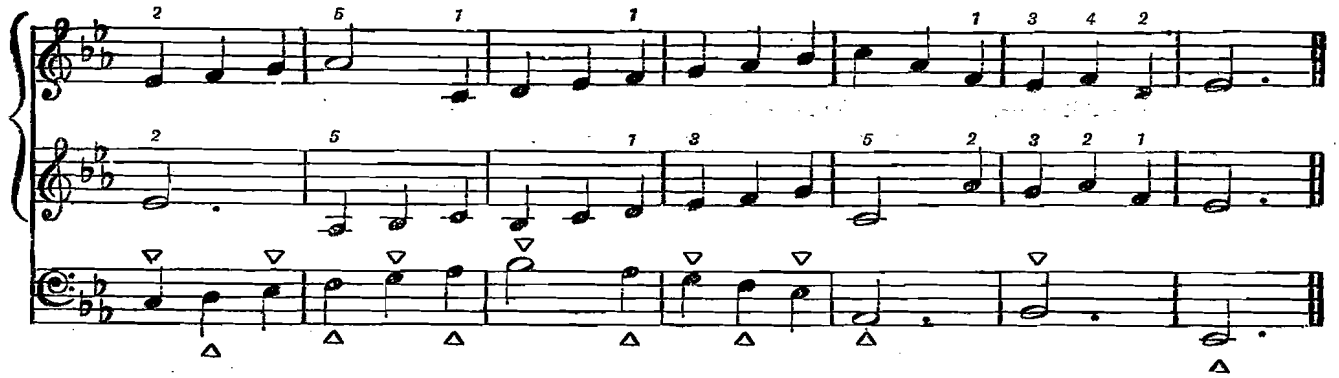


* The order of the two manuals may be varied in each exercise, according to the teacher's discretion.—Ed.


63
Man. I.
Man. II.
Ped.
64
Man. I.
Man. II.
Ped.

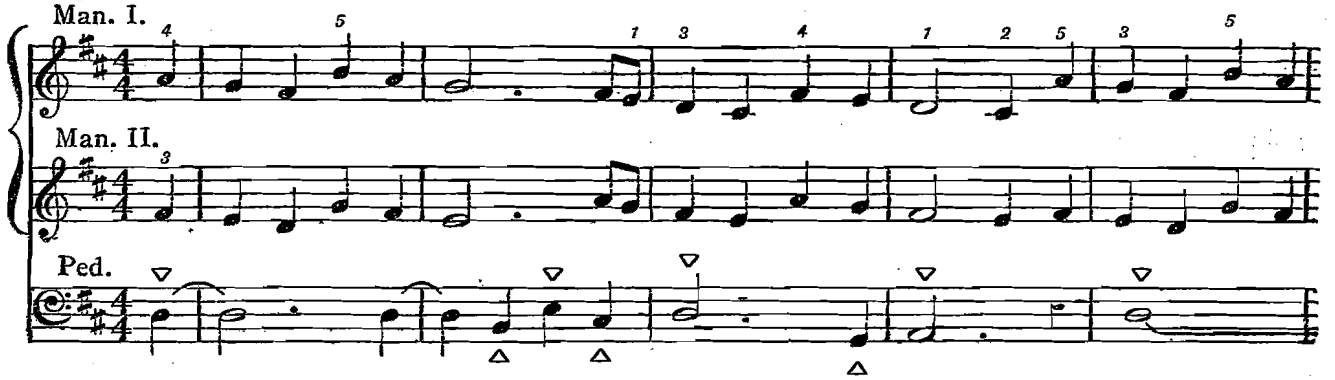


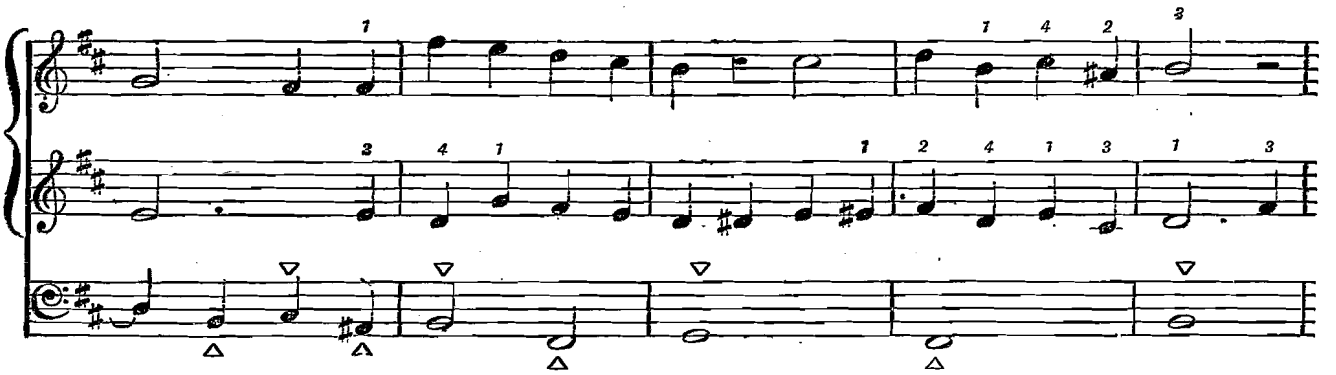
65

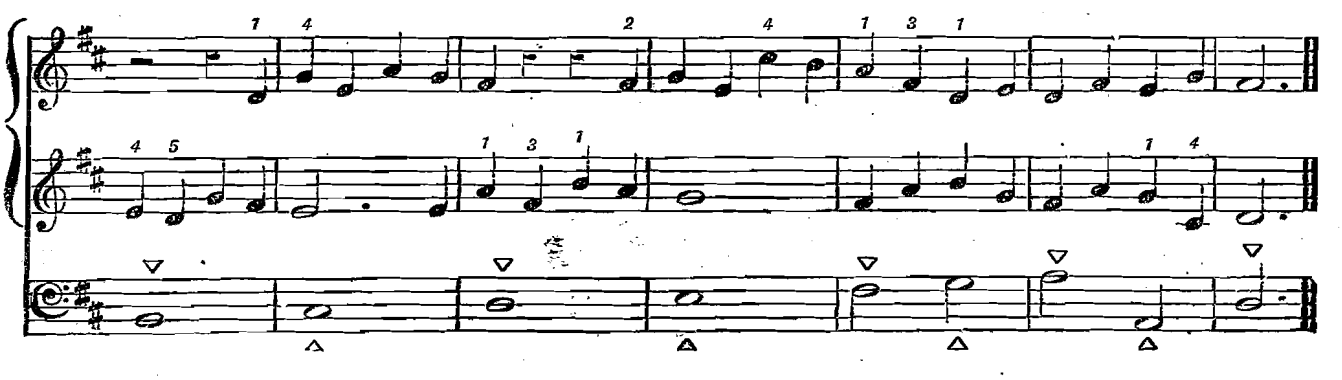
Man. I.

Man. II.

Ped.







TOE AND HEEL.

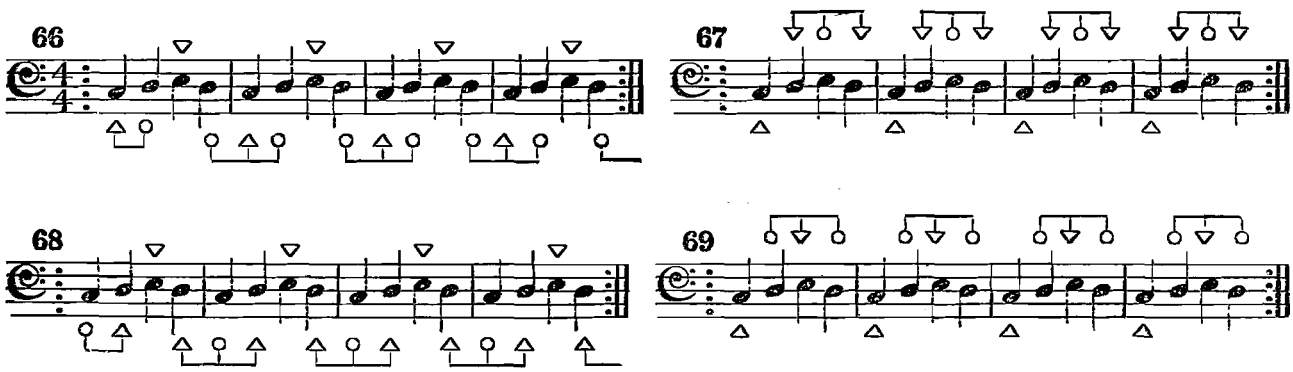
94. The pupil may now begin to practise pedalling with the "toe and heel."

 signifies that the heel is followed by the toe of the same foot.

 signifies that the toe is followed by the heel of the same foot.

In all cases where these signs are attached to a continuous line, the same foot is to play the notes.

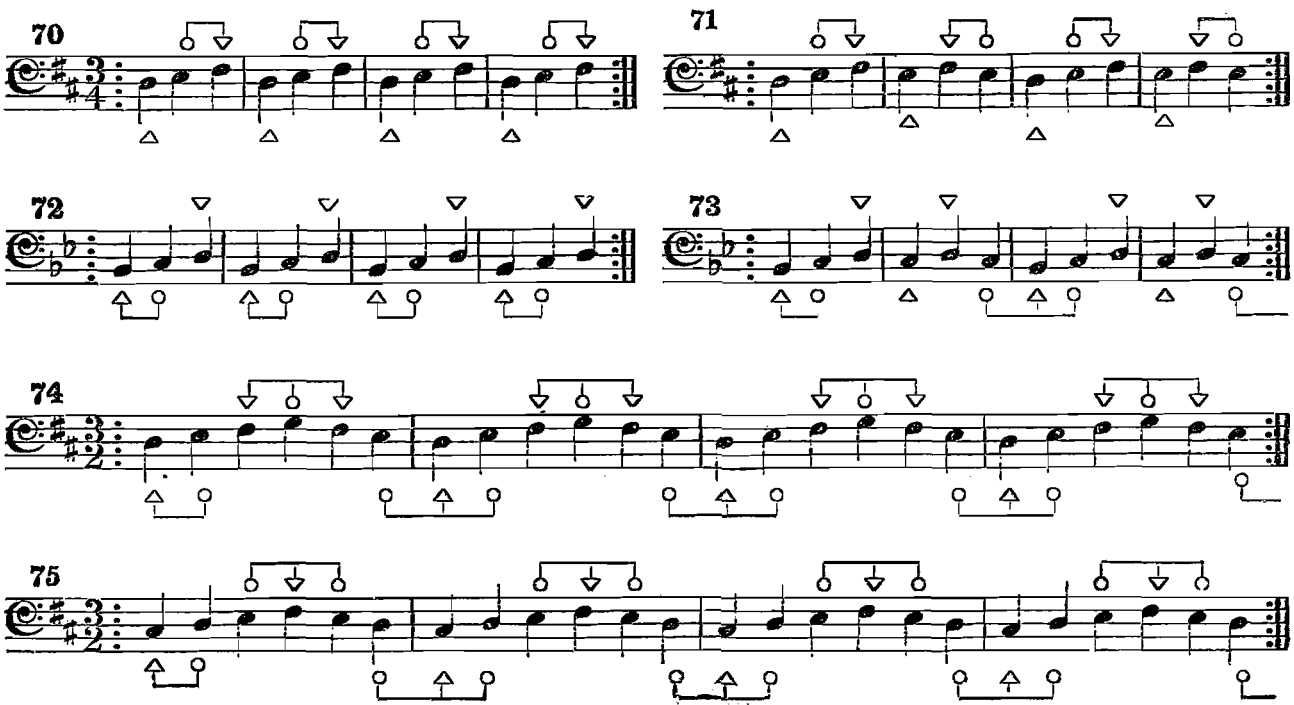
Signs for the right foot are over the notes; signs for the left foot under the notes.

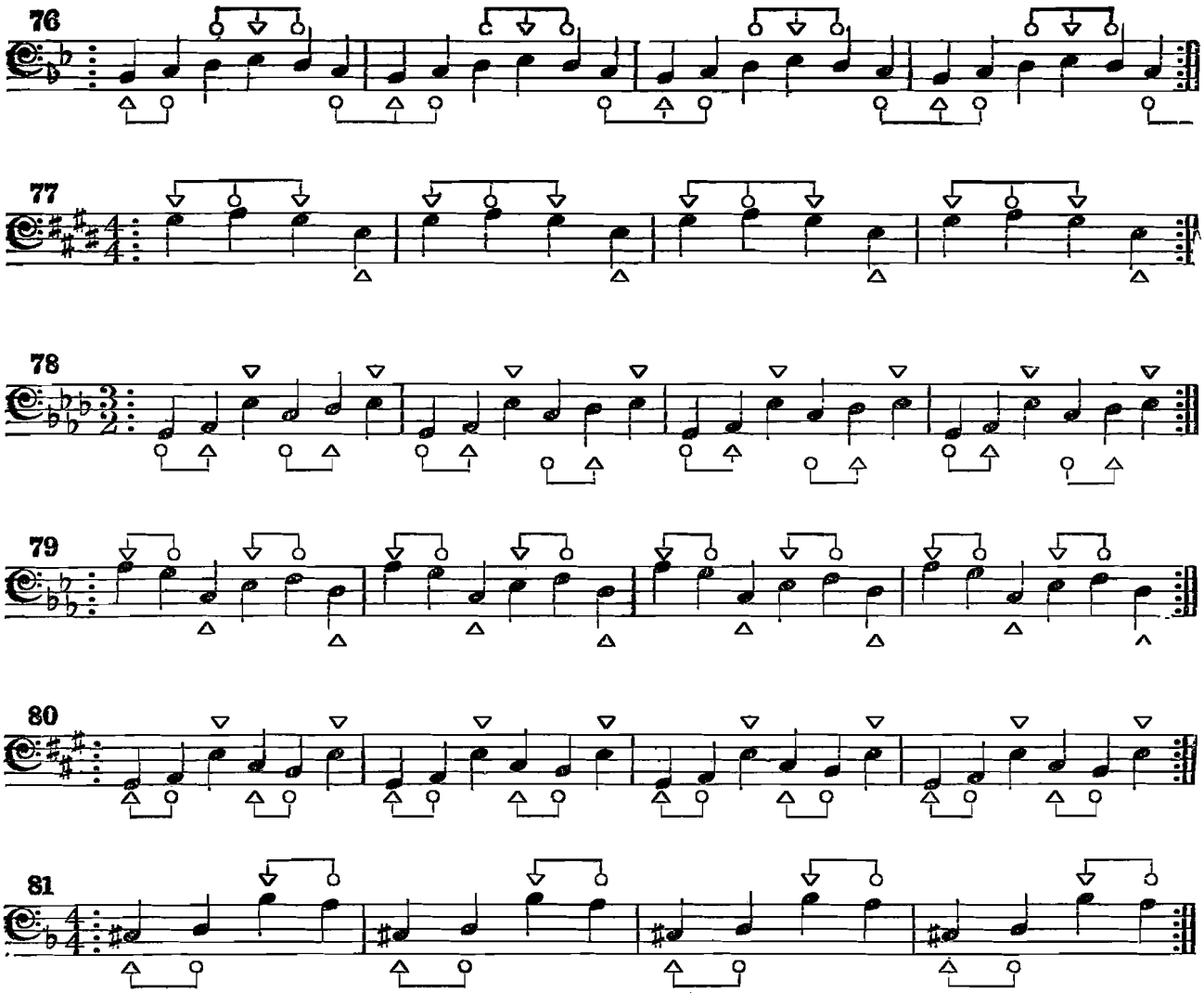


The above examples will at once give the student an idea of the many ways in which the same passage may often be pedalled. Sometimes all of them are equally smooth and good.

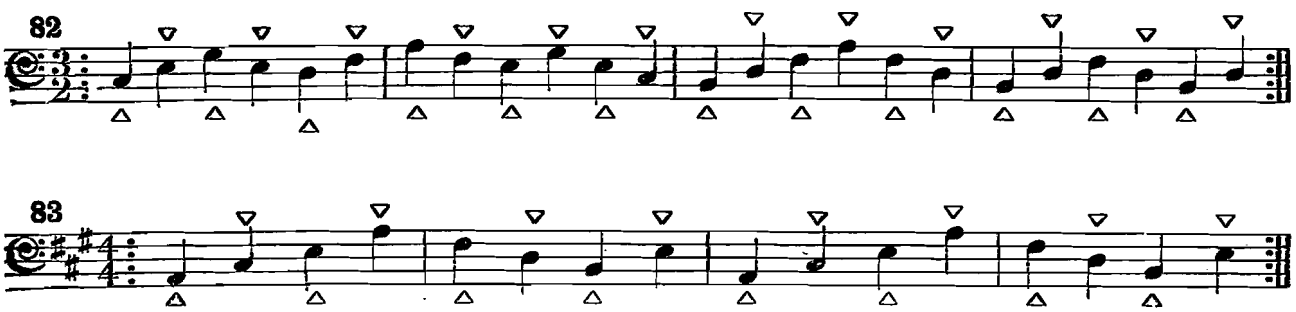
95. The next exercises will introduce the movement of toe and heel to and from a sharp key.

(Take great care that all the sounds are exactly equal in length, and smooth, though quite distinct.)





The feet, in crossing each other, often have to take the interval of a third.

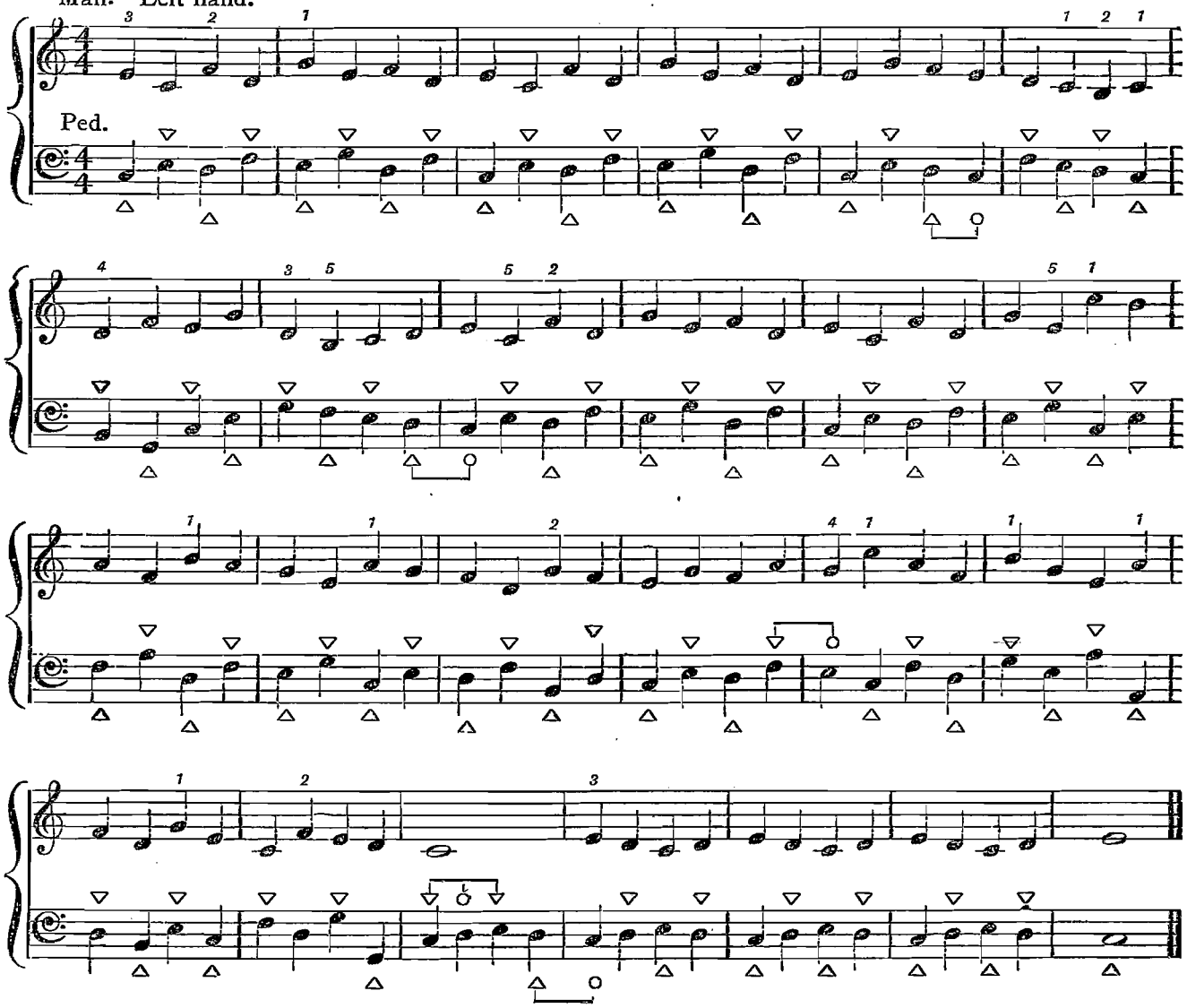


The practice of toe-and-heel pedalling will now be combined with an independent part for the hands.

EASY EXERCISES FOR GIVING INDEPENDENCE OF MOVEMENT TO HANDS AND FEET.

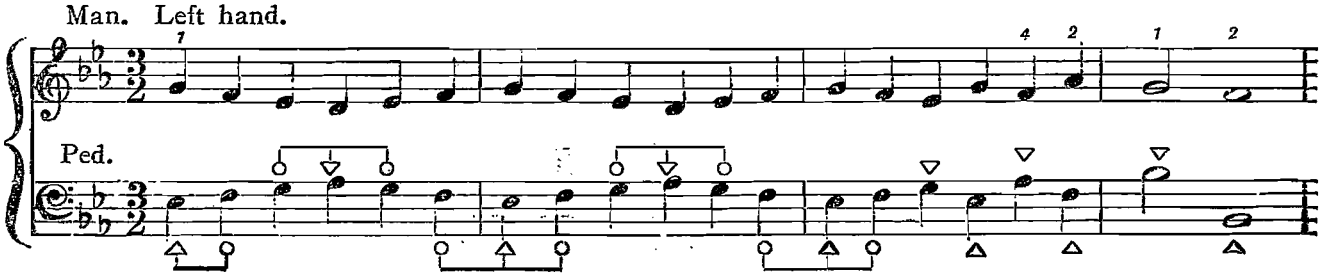
84

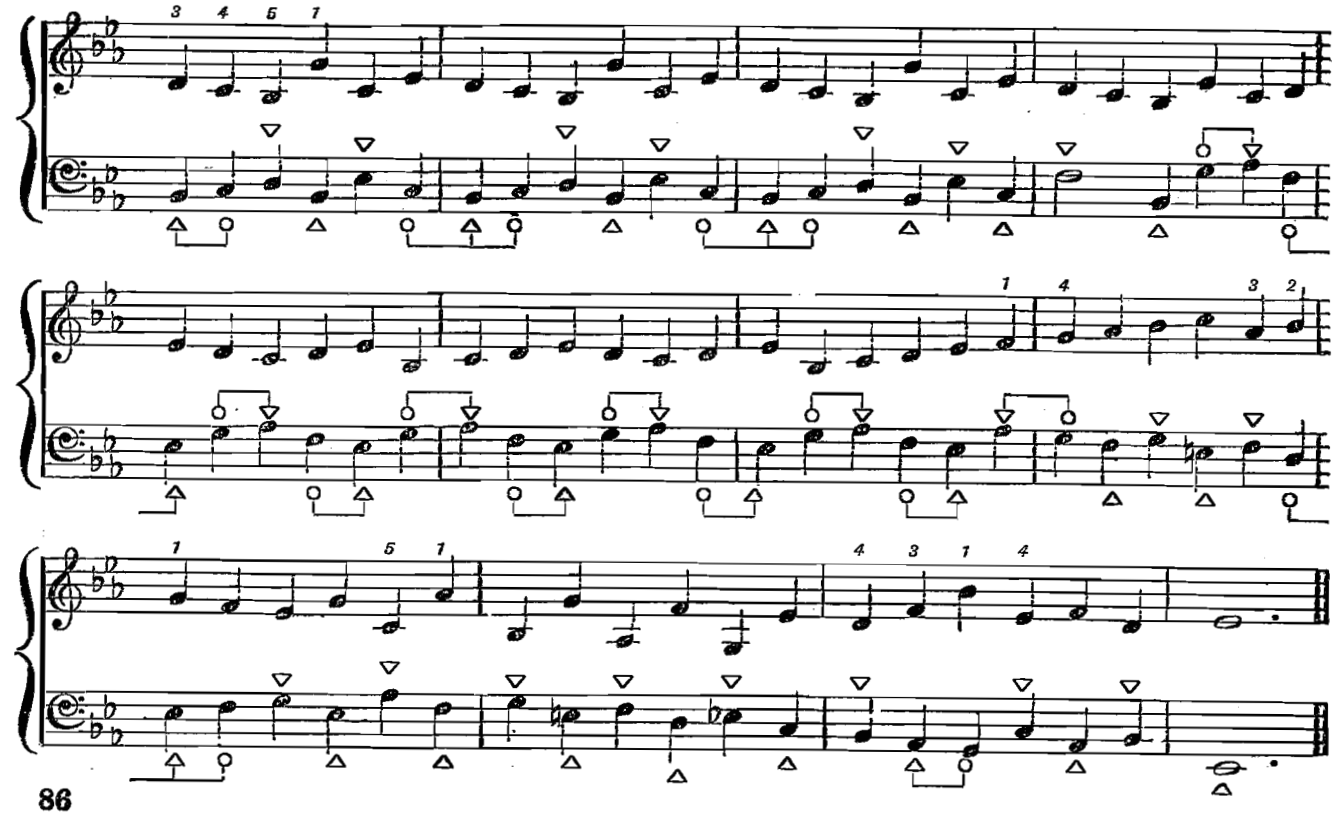
Man. Left hand.



85

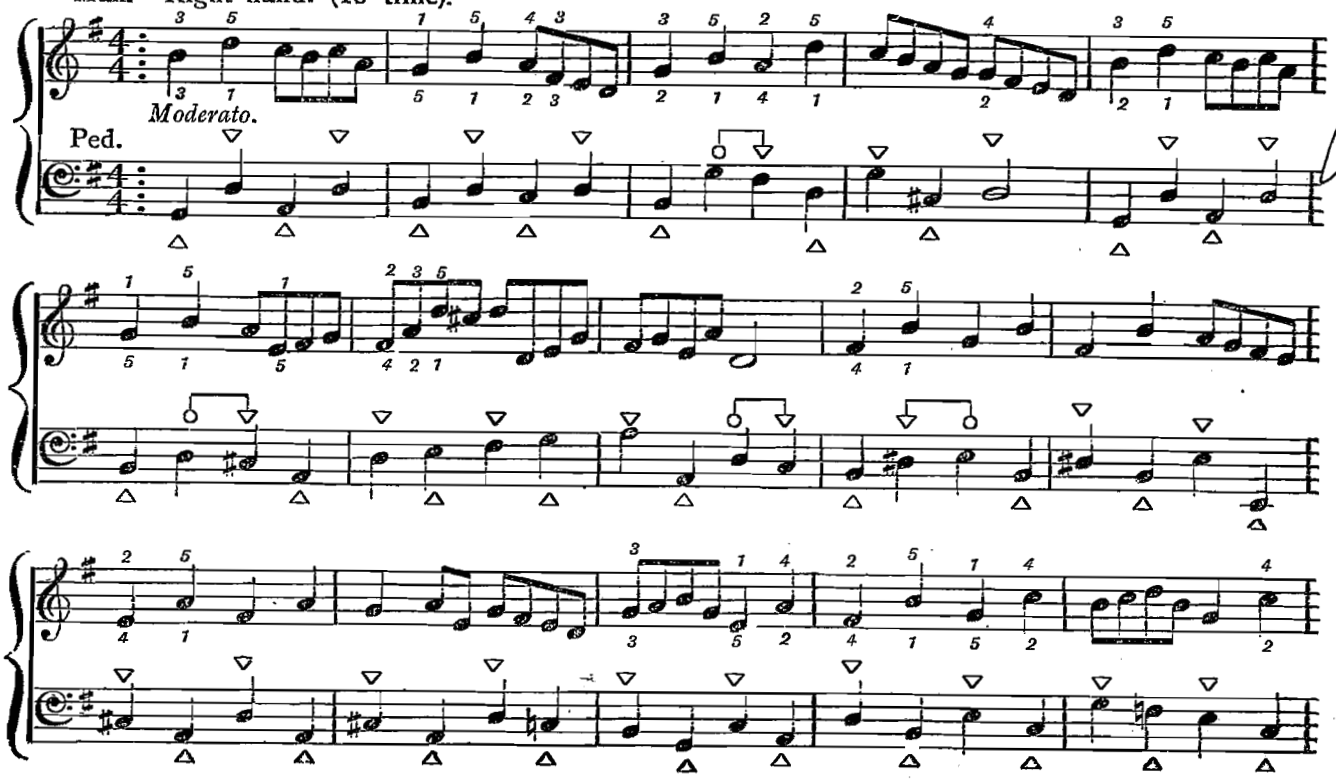
Man. Left hand.

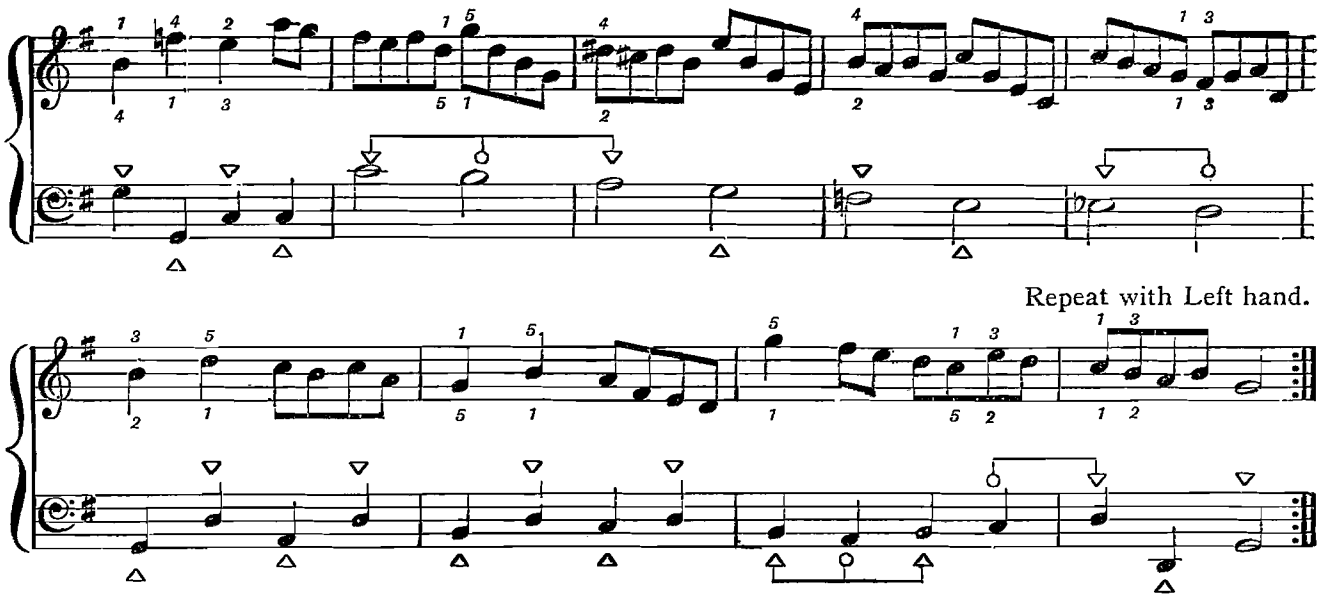




86

Man. Right hand. (1s time).



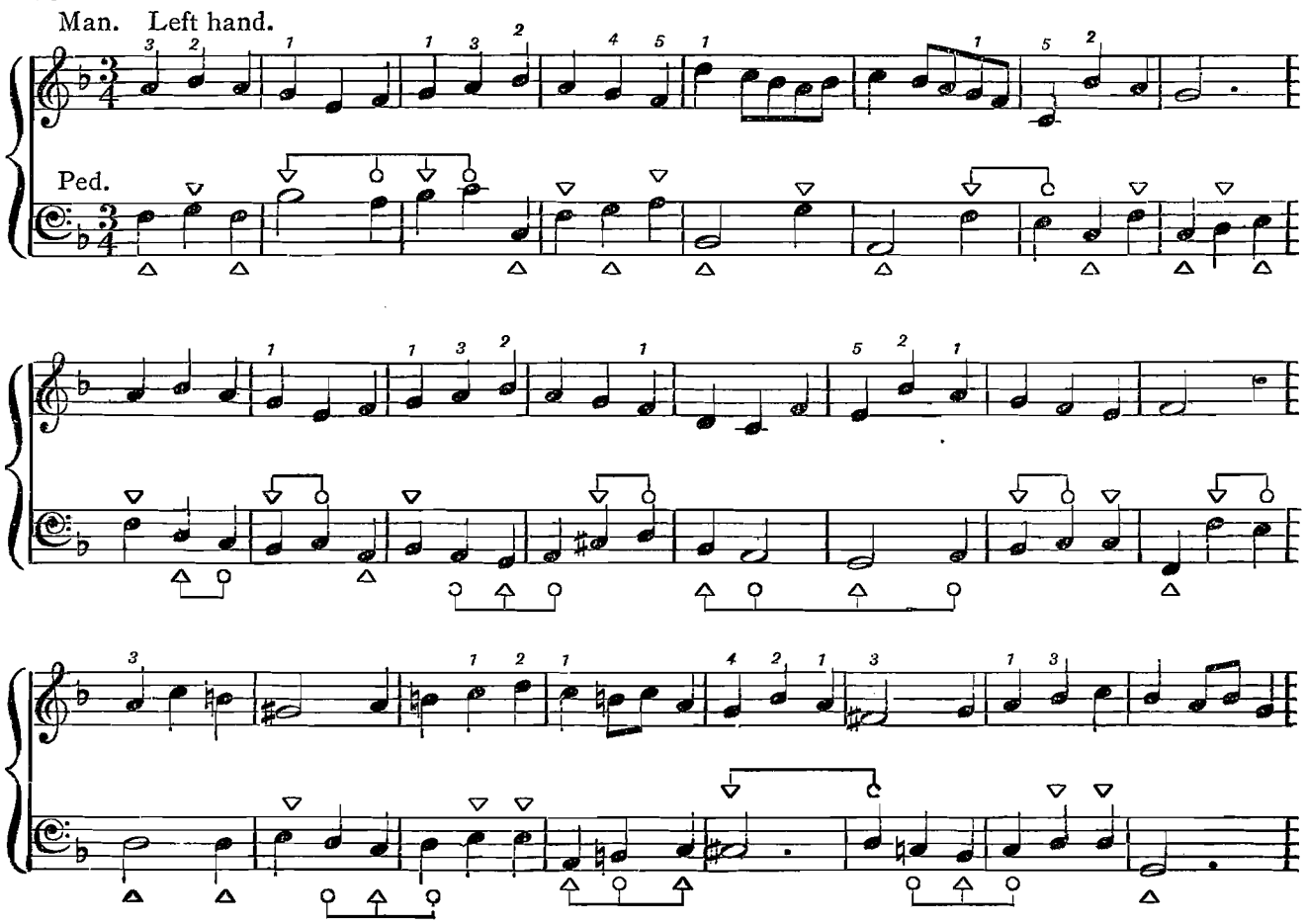


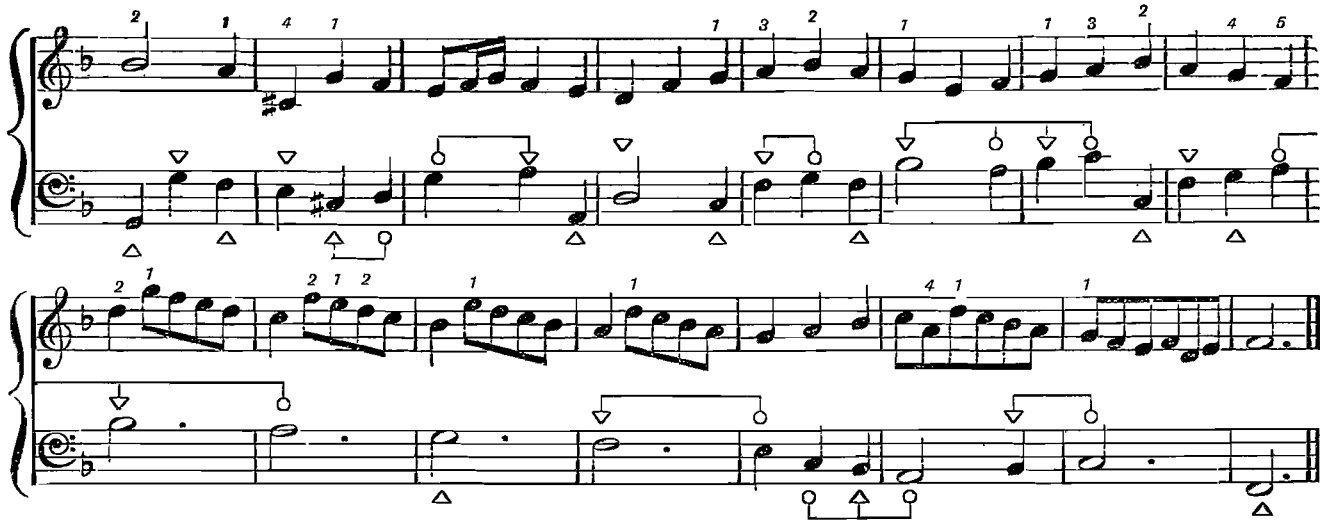
Repeat with Left hand.

87

Man. Left hand.

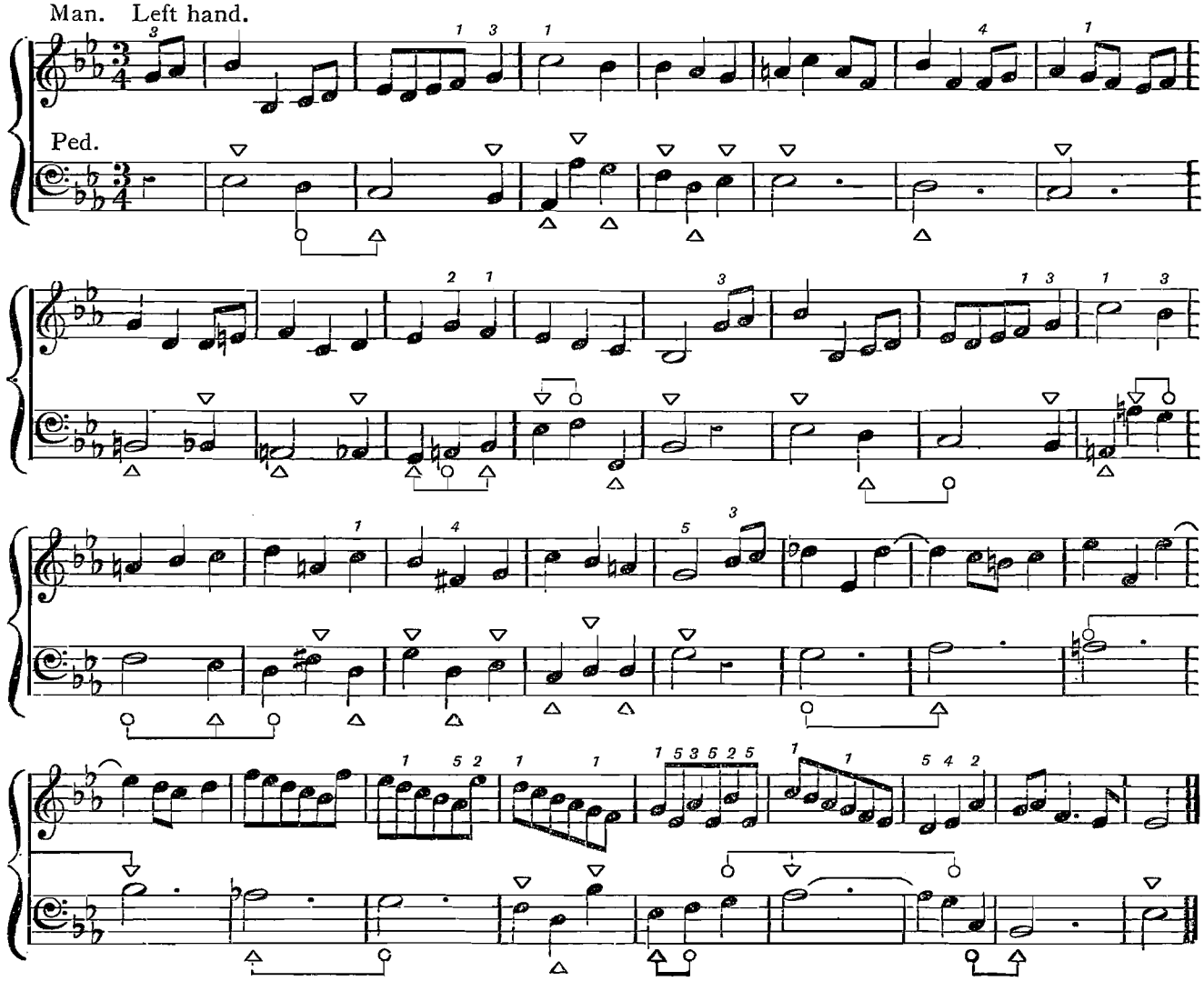
Ped.





88

Man. Left hand.

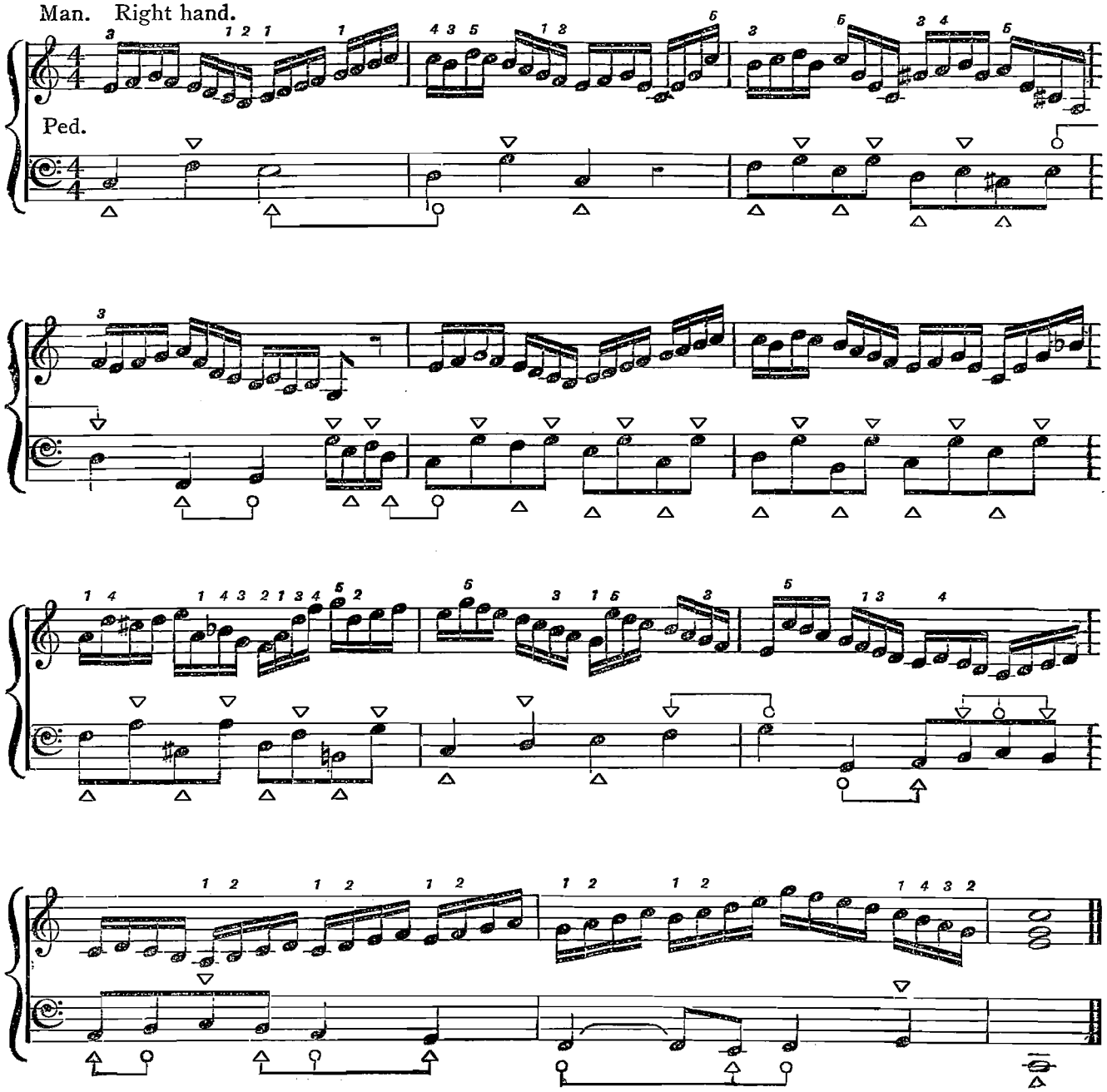


EXERCISES FOR COMBINATION OF MANUAL SCALE-PASSAGES AND INDEPENDENT MOVEMENT OF THE FEET.

(Care must be taken that each of the four semiquavers is of the same length. It is a common fault to pause on the last of each group.)

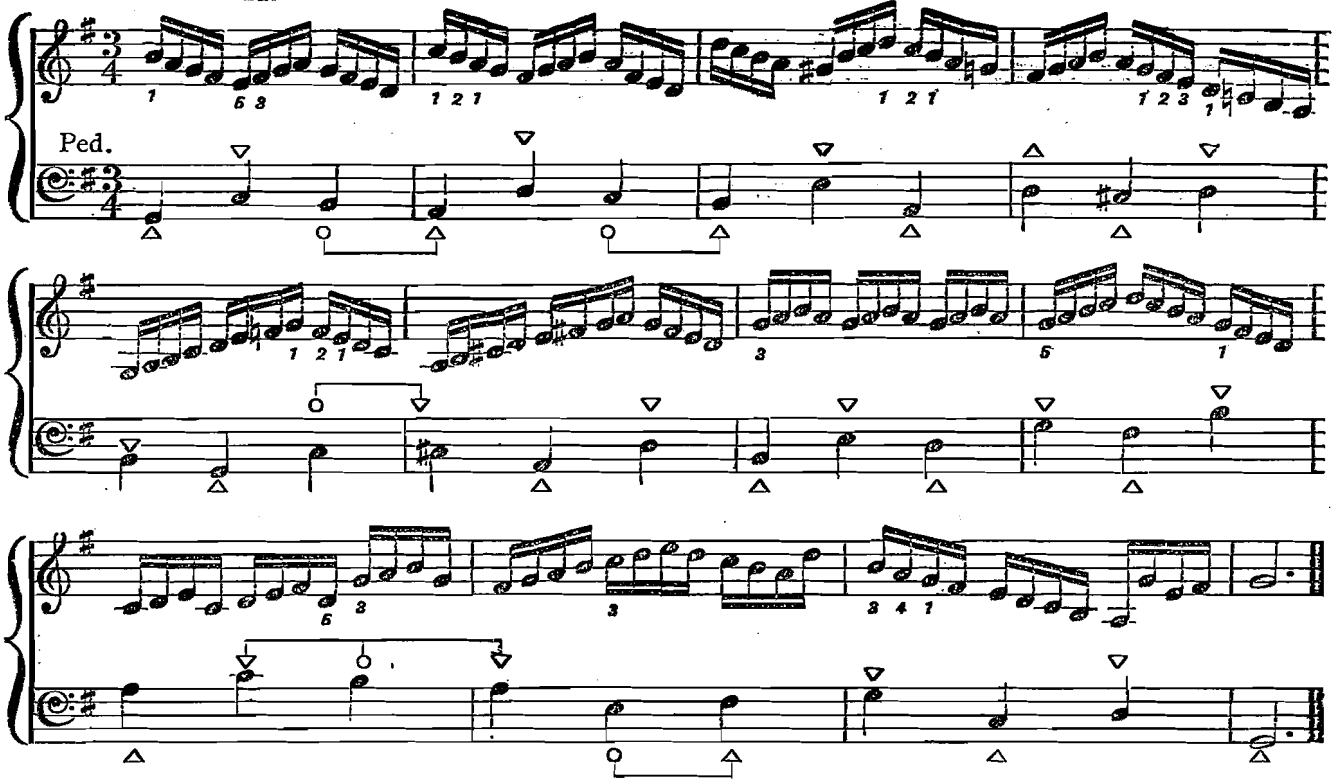
89

Man. Right hand.



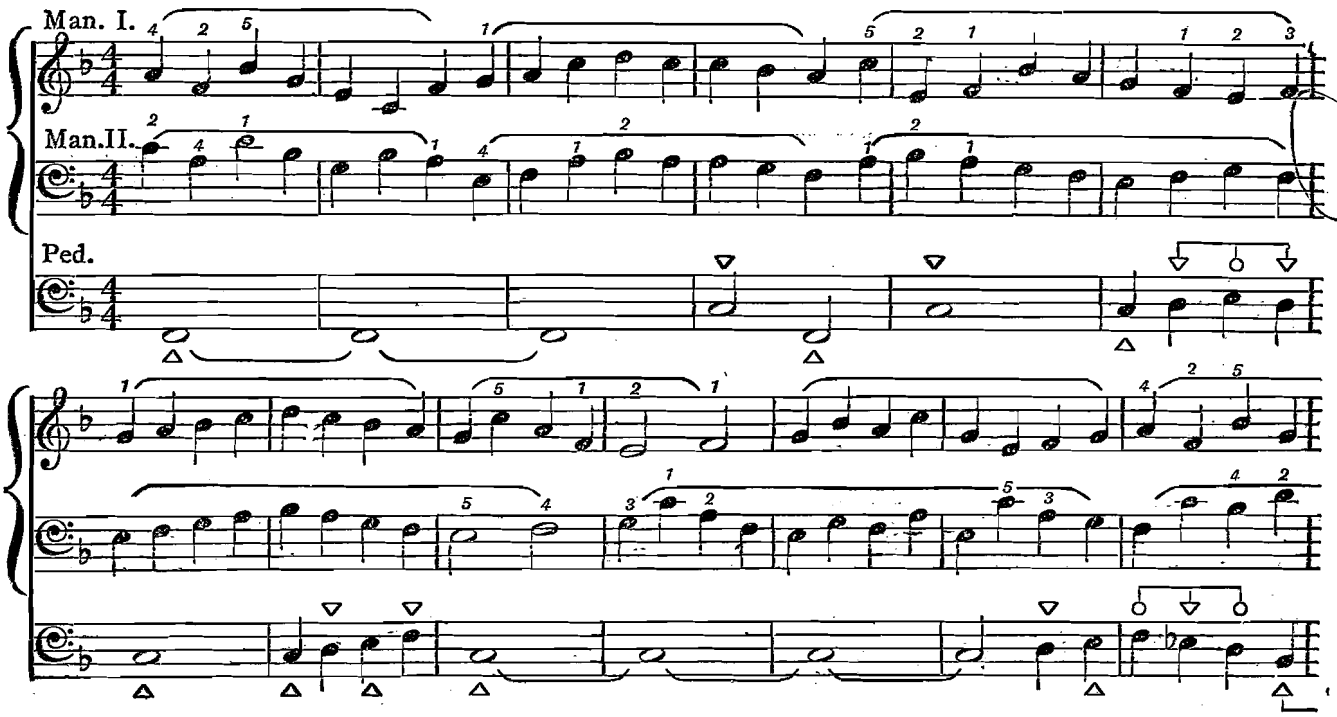
90

Man. Left hand.



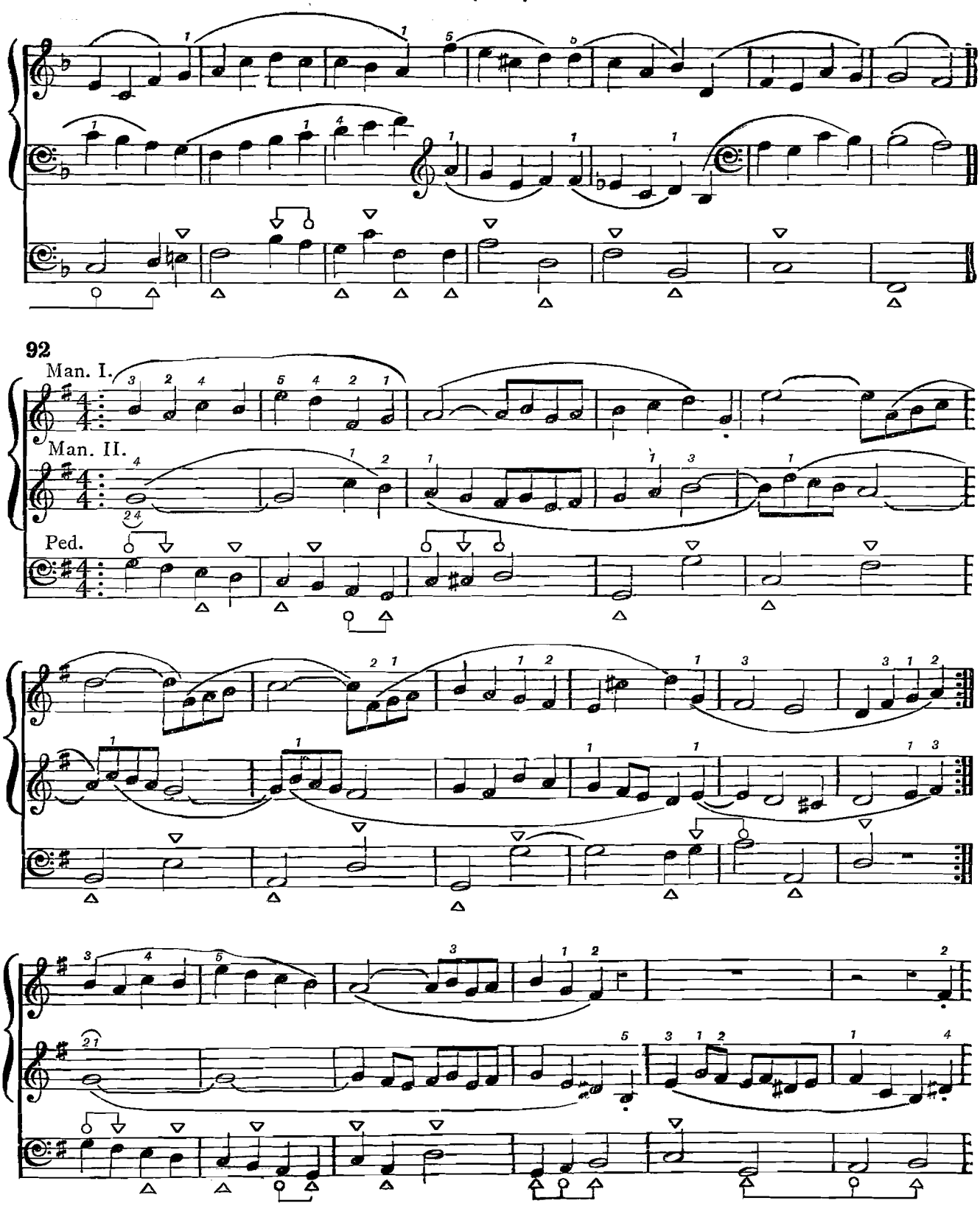
EASY TRIOS EMBODYING THE PREVIOUS WORK DONE.*

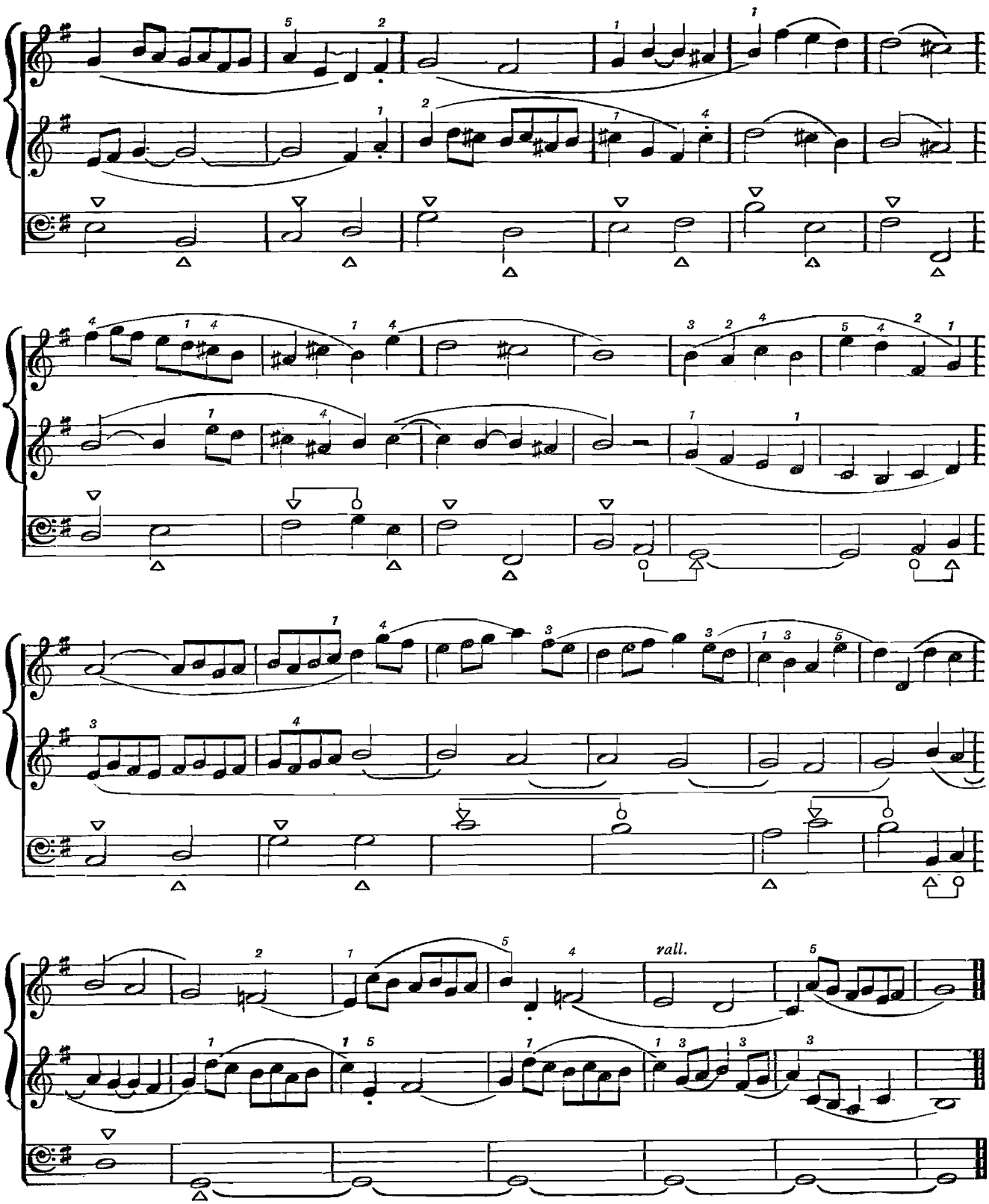
91



* Soft stops of 8 feet should be used on the two manuals, of nearly equal strength, but of different *quality*. One of the manuals to be coupled to a soft pedal-stop of 16 feet.

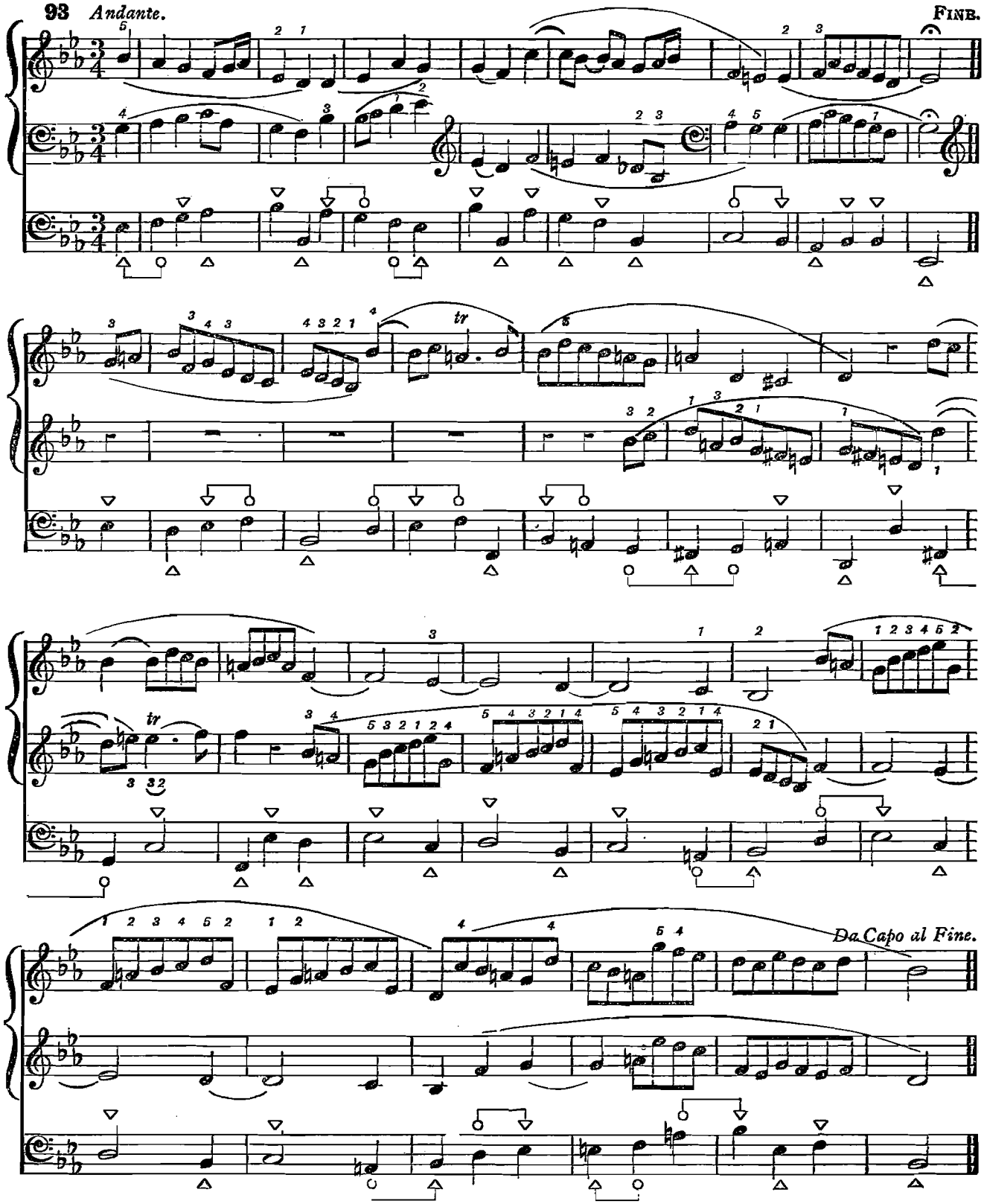
The order of the two manuals may be varied in each Trio, according to the teacher's discretion.—Ed.


92
Man. I.
Man. II.
Ped.


rall.

93 *Andante.*

FINE.



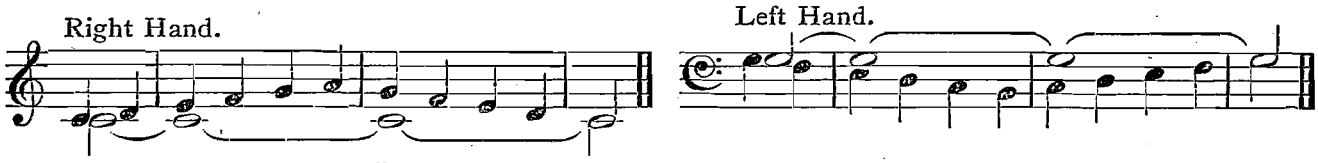
These easy Trios may, with advantage to the student, be followed by a careful study of Albrechtsberger's Twelve Trios, edited by Arthur W. Marchant, Mus. Bac. Oxon. (No. 48, Novello's Music Primers), Schneider's Forty-eight Trios (Part IV. of his Complete Organ School), Smart's Two Trios (No. 2, Smart's Original Compositions for the Organ), and the Ten Trios by Rheinberger (Op. 49).

THE LEGATO STYLE.

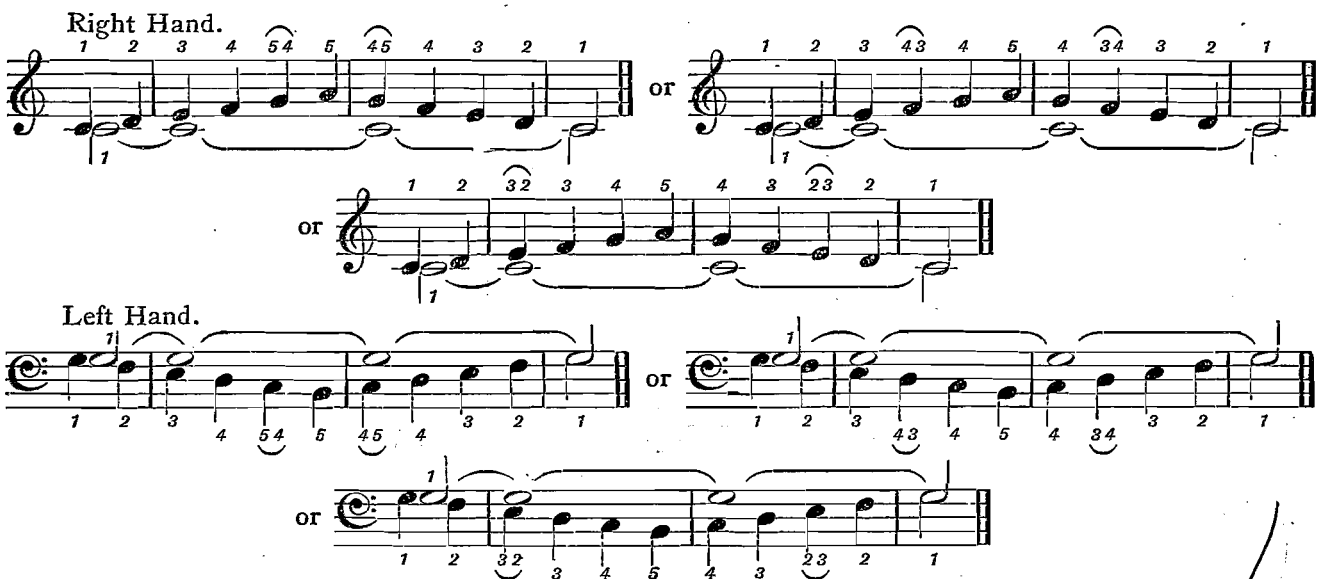
96. We have now to enter upon a branch of study essentially characteristic of the organ, namely, the *legato* touch, obtained by changing fingers on a given key without repeating the sound.

The principle can be thus simply explained :—

In the following passages—

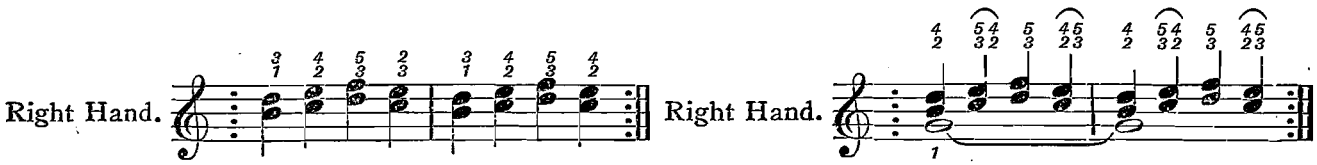


it will be found that a *staccato* effect is produced if one finger, say the fourth, plays two consecutive notes; but a very smooth effect is produced if any two fingers *shift* on one note, thus :—

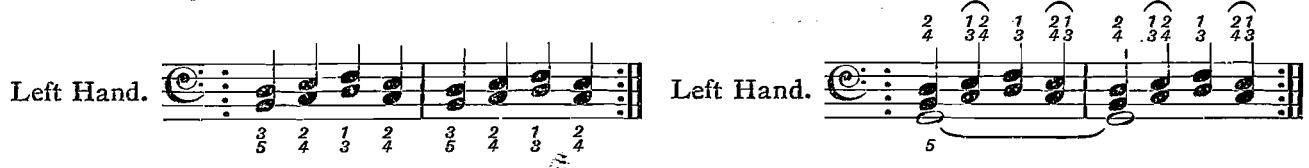


For further illustration of the principle, play these in the keys of D and also E♭.

97. The "shifting" *legato* touch is only used when necessary. Thus, in the first of the two following examples, the thirds would be fingered as on a pianoforte; but in the second example the shifting must be used :—



Similarly in the left hand :—

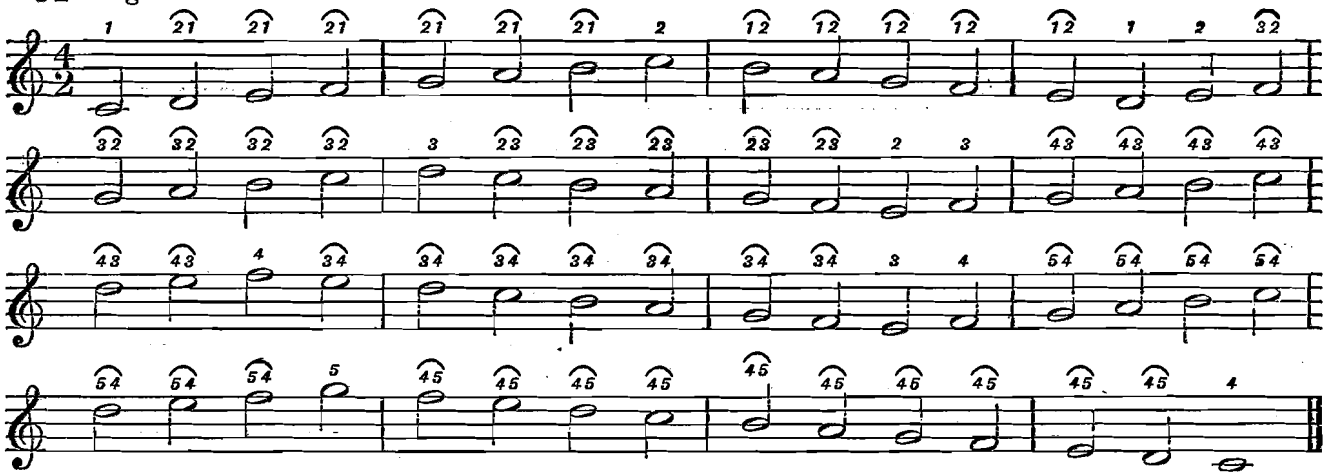


98. Although the "shifting" *legato* is never actually required when playing scales in single notes, the student is recommended to practise the following exercises very carefully, for the purpose of learning to shift by instinct.

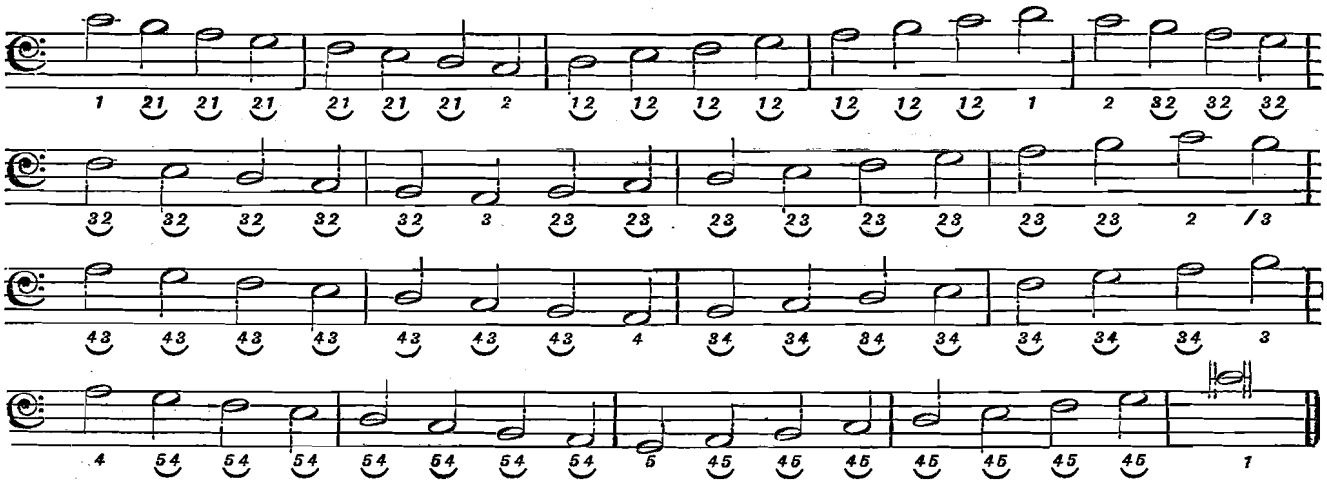
99. Three things have to be remembered whilst practising the following exercises :—

1. The notes must not be repeated when the fingers are changing.
2. The proper position of the hand is on no account to be disturbed.
3. Though played *legato*, the notes must not be run into one another, or *blurred*.

94 Right hand.

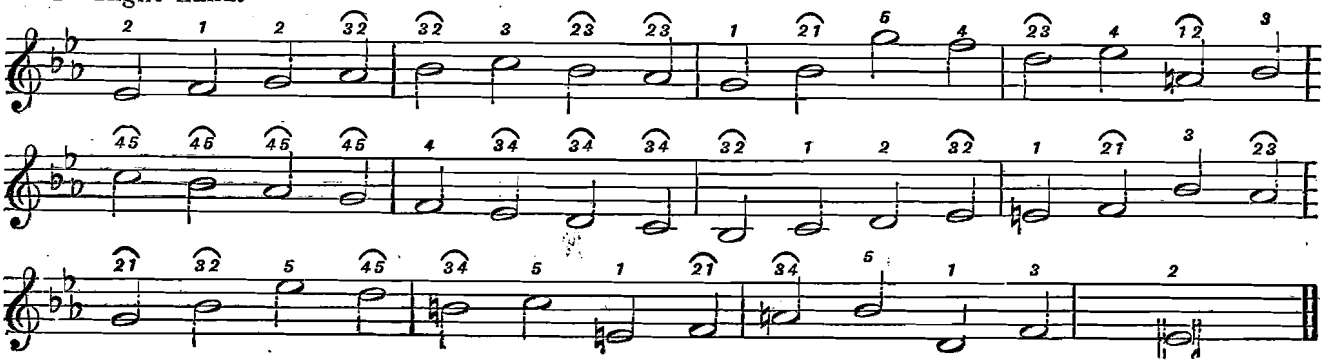


95 Left hand.

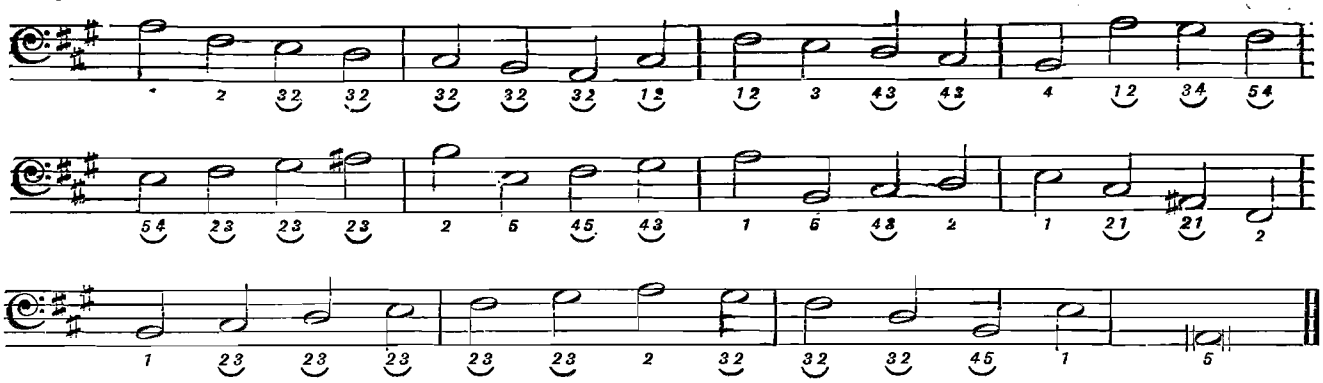


100. The change of fingers on the black keys must also be attentively practised.

96 Right hand.



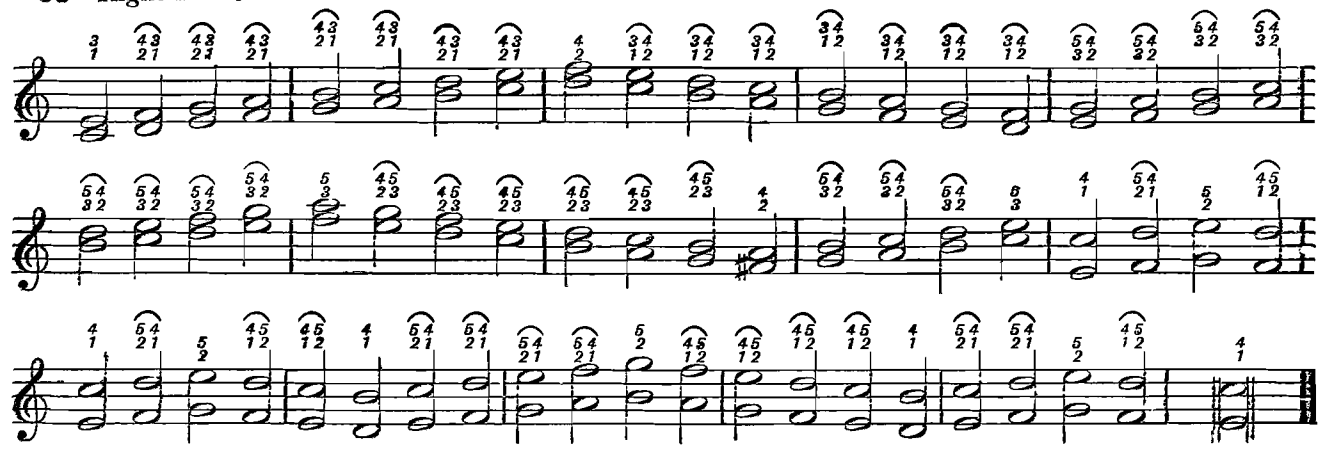
97 Left hand.



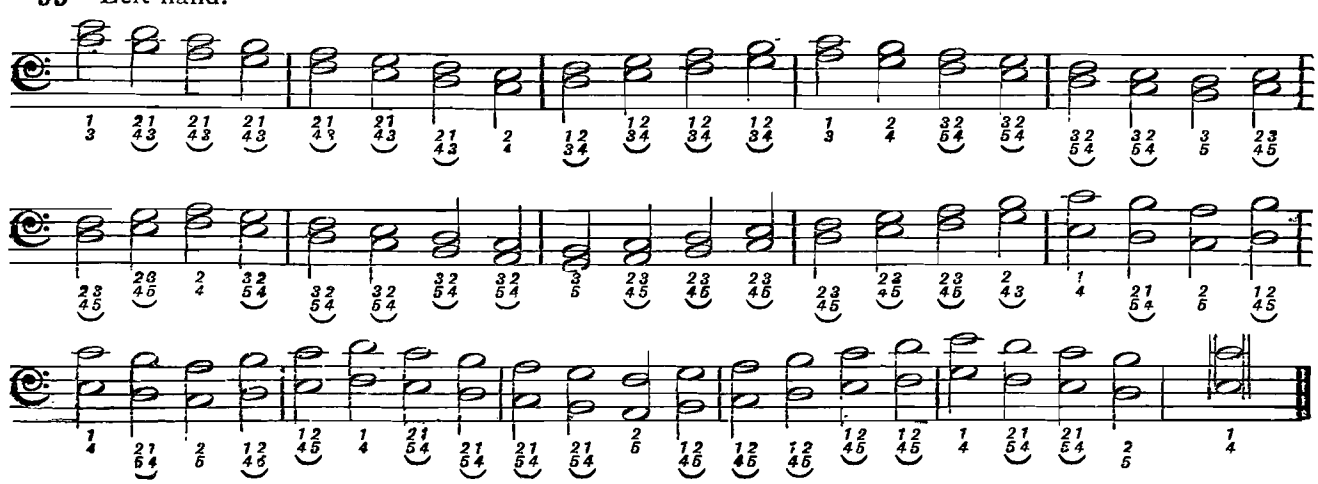
The student should also play slowly with each hand two octaves of all the major scales, shifting 2 3, 3 4, and 4 5, in turns.

101. EXERCISES FOR SHIFTING THE FINGERS IN THIRDS OR SIXTHS.

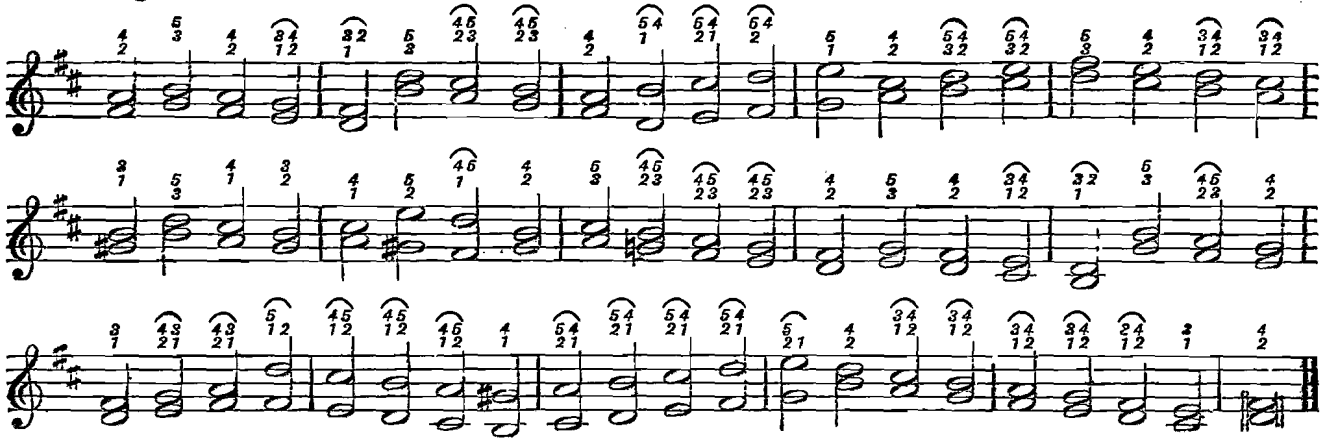
98 Right hand.



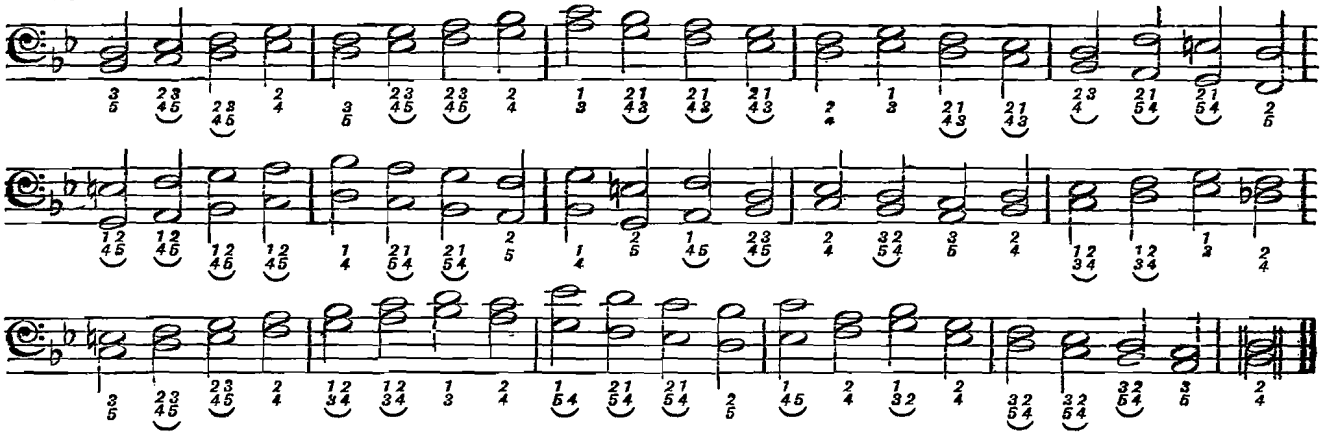
99 Left hand.



100 Right hand.



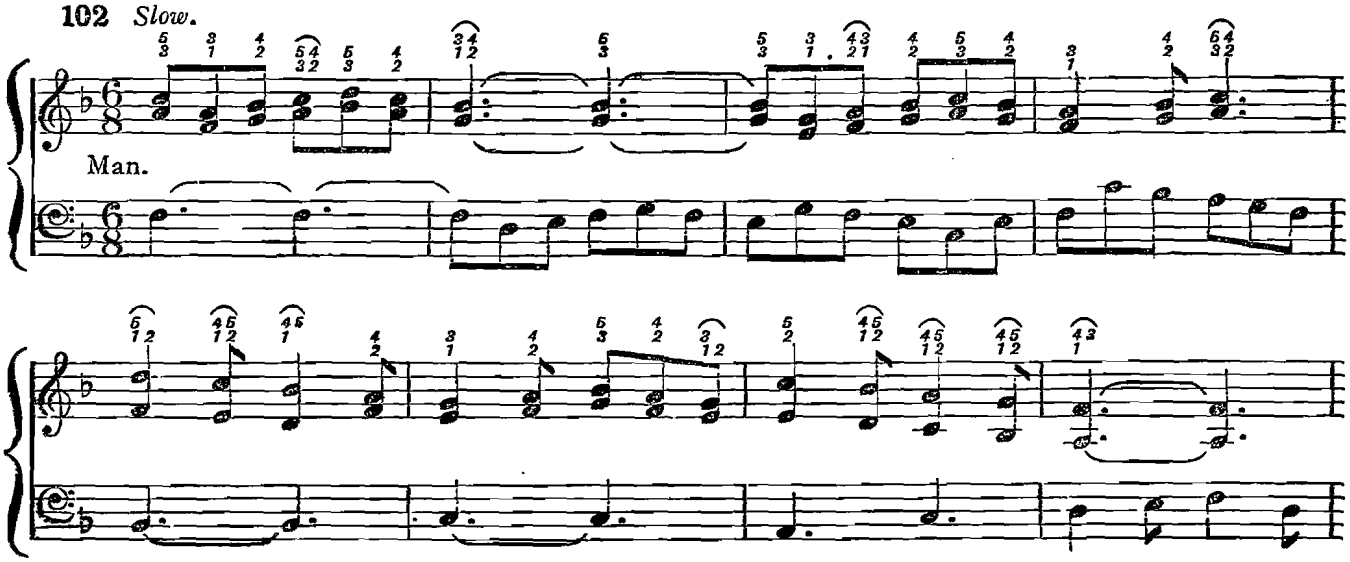
101 Left hand.

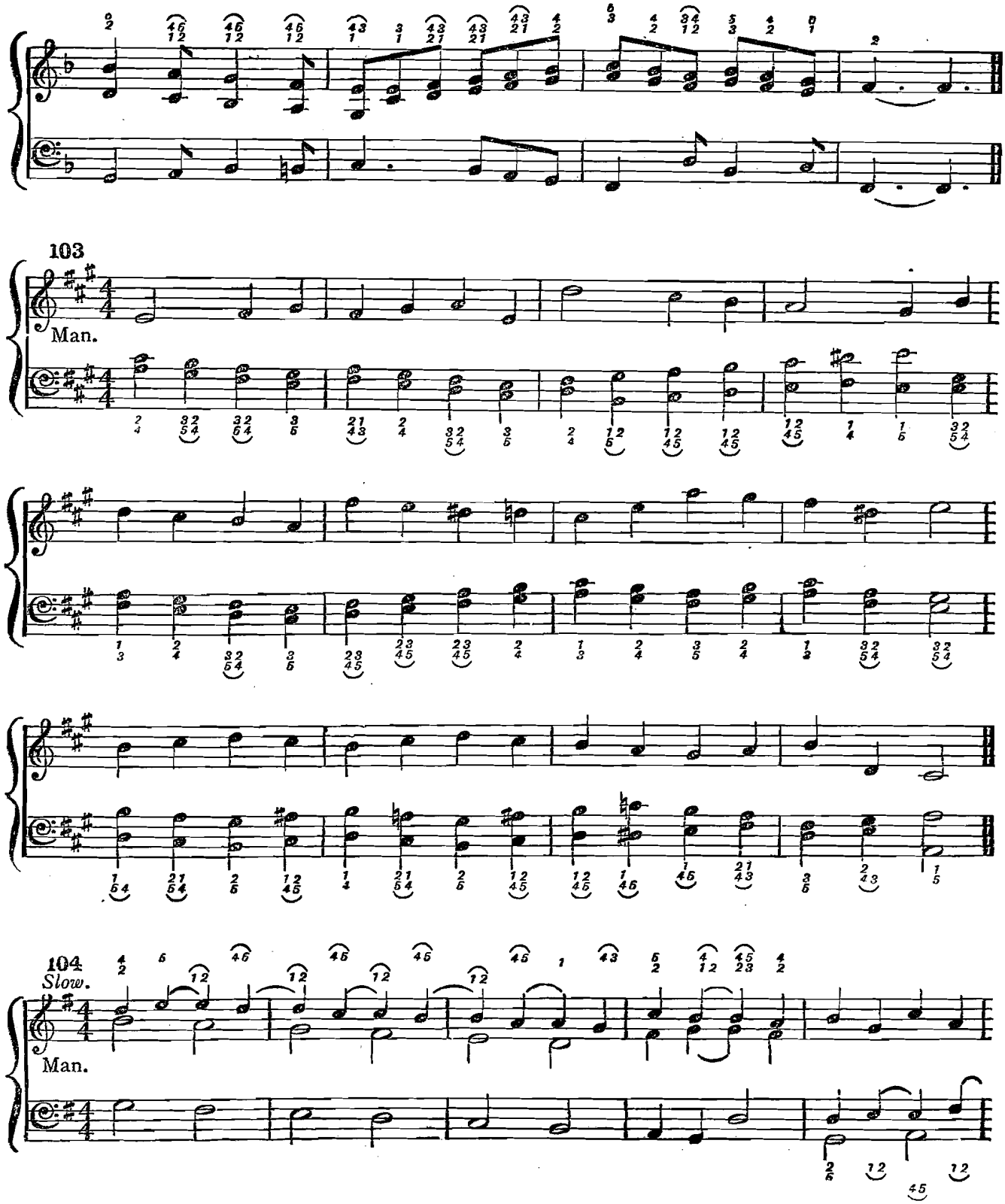


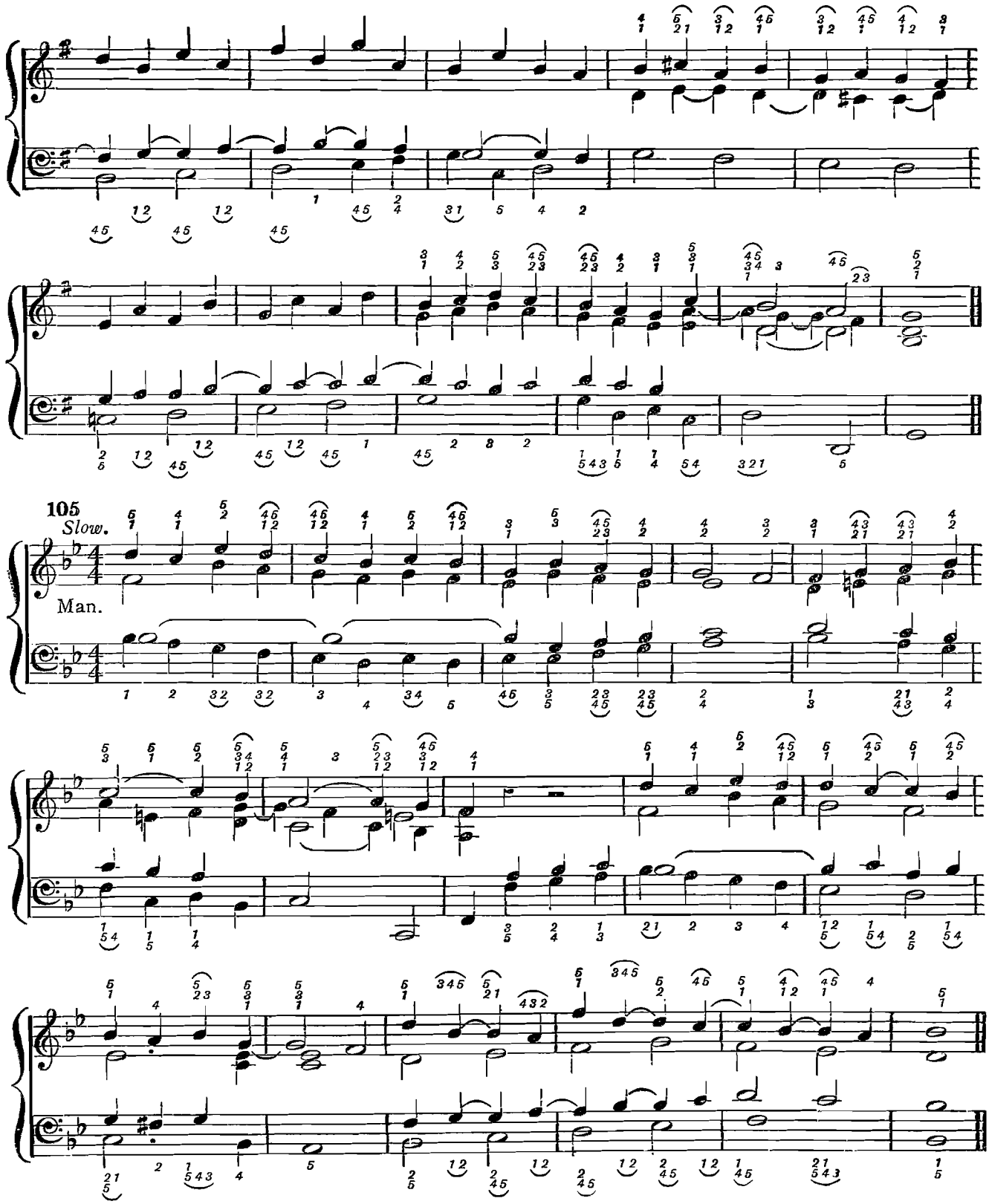
EXERCISES ON THE LEGATO TOUCH.

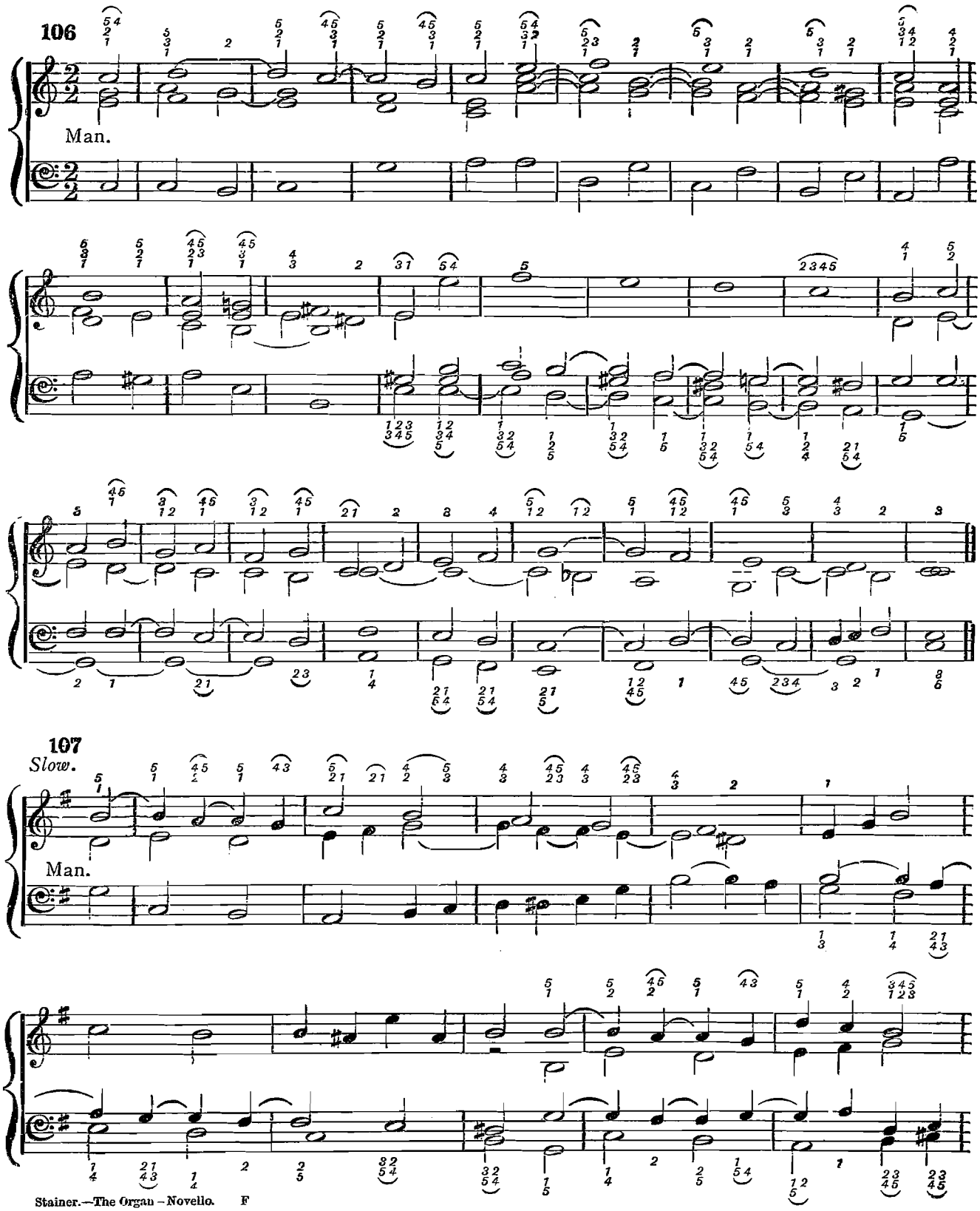
These exercises should be played several times on each manual (Great, Swell, Choir).

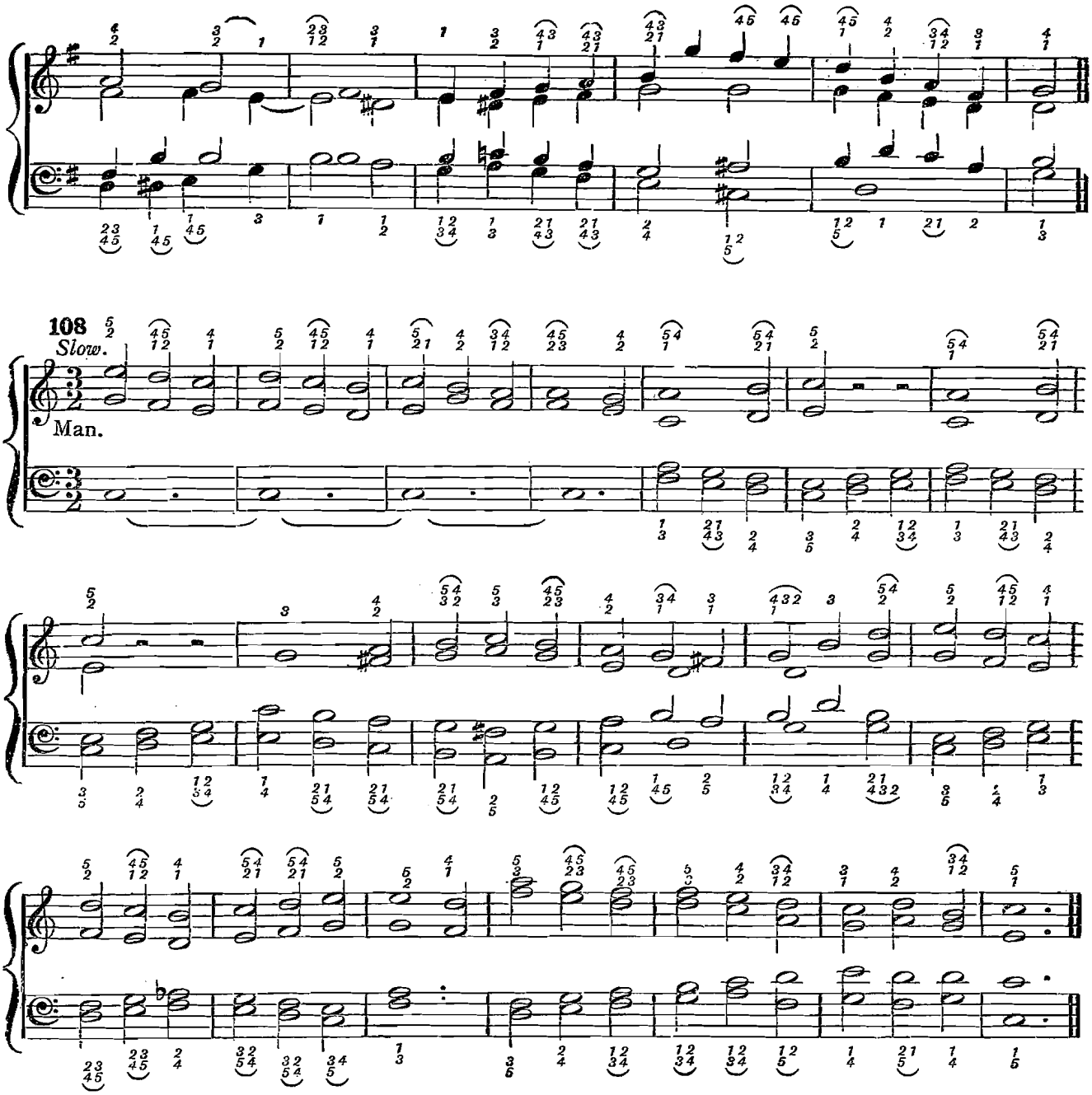
102 *Slow.*




103
Man.
104
Slow.
Man.


105
Slow.
Man.

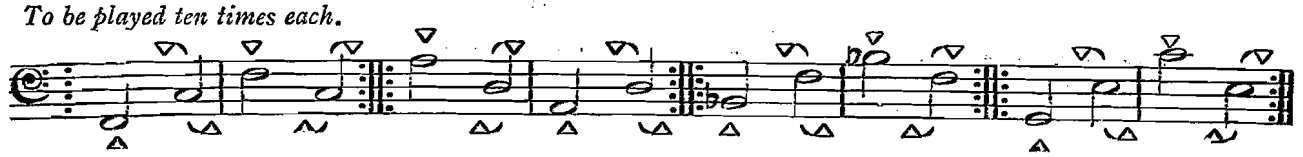

106
Man.
107
Slow.
Man.



102. The feet have also to shift occasionally in order to avoid a *staccato* style. But this rarely, if ever, has to be done on a short key or sharp.

109 EXERCISE FOR SHIFTING THE FEET ON ONE PEDAL-KEY.

To be played ten times each.

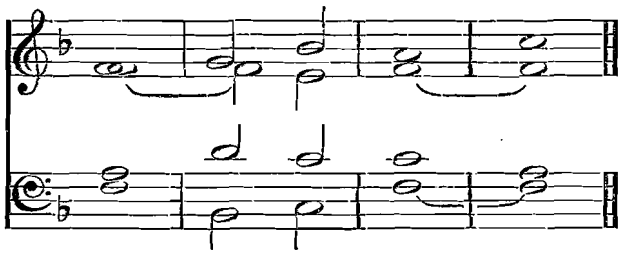


CHORALS AND HYMN-TUNES.

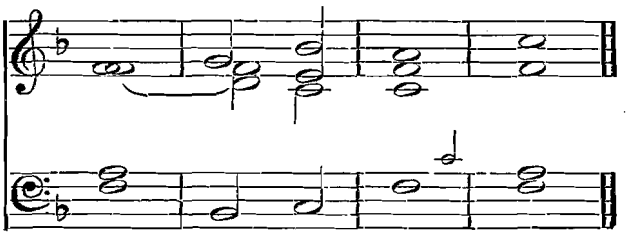
103. The beautiful chorals now given will, whilst teaching the *legato* touch, illustrate some important principles.

The hands have to mutually assist each other. For example, in playing a choral on the manuals without using the pedals, two parts will ordinarily fall to each hand, namely, the treble and alto to the right hand, and the tenor and bass to the left hand; but, when notes are too extended to be taken by the *left* hand, they must be taken by the right hand, and *vice versâ*. Thus :—

Written.



Played.



When playing (without pedals) from ordinary hymnals, in which the treble and alto parts are in the upper stave, and the tenor and bass in the lower, constant attention must be given to this principle. In the following chorals the right-hand part has been purposely placed in the upper stave, and the left-hand part in the lower, so that the student may give unqualified attention to the *legato* style of playing.

104. It will be found that a most useful and interesting course of practice can be obtained by playing ordinary hymn-tunes in *three* different ways :—

First (*see* Exercise 110), on the manuals alone;

Secondly (*see* Exercise 111), by playing the two upper parts (treble and alto) with the right hand, assigning the *tenor part only* to the left hand, and the bass to the feet;

Thirdly (*see* Exercise 112), by playing the treble part only as a solo, and taking both the alto and tenor parts with the left hand, and the bass with the feet.

In playing in the first of the three ways just described, entire attention can be given to the *legato* touch. Occasionally a note must be transferred from the left to the right hand without repetition. An example of this will be found in the sixth bar from the end of Exercise 110.

In playing in the second manner, great care should be taken to prevent the left hand from *doubling the pedal part*. The left hand will often have to play a note already drawn down by the pedal coupler; in such cases the finger should always remain on the note as if its presence were required there. Although the left hand should not play the pedal part, it may and should sometimes assist the right hand.

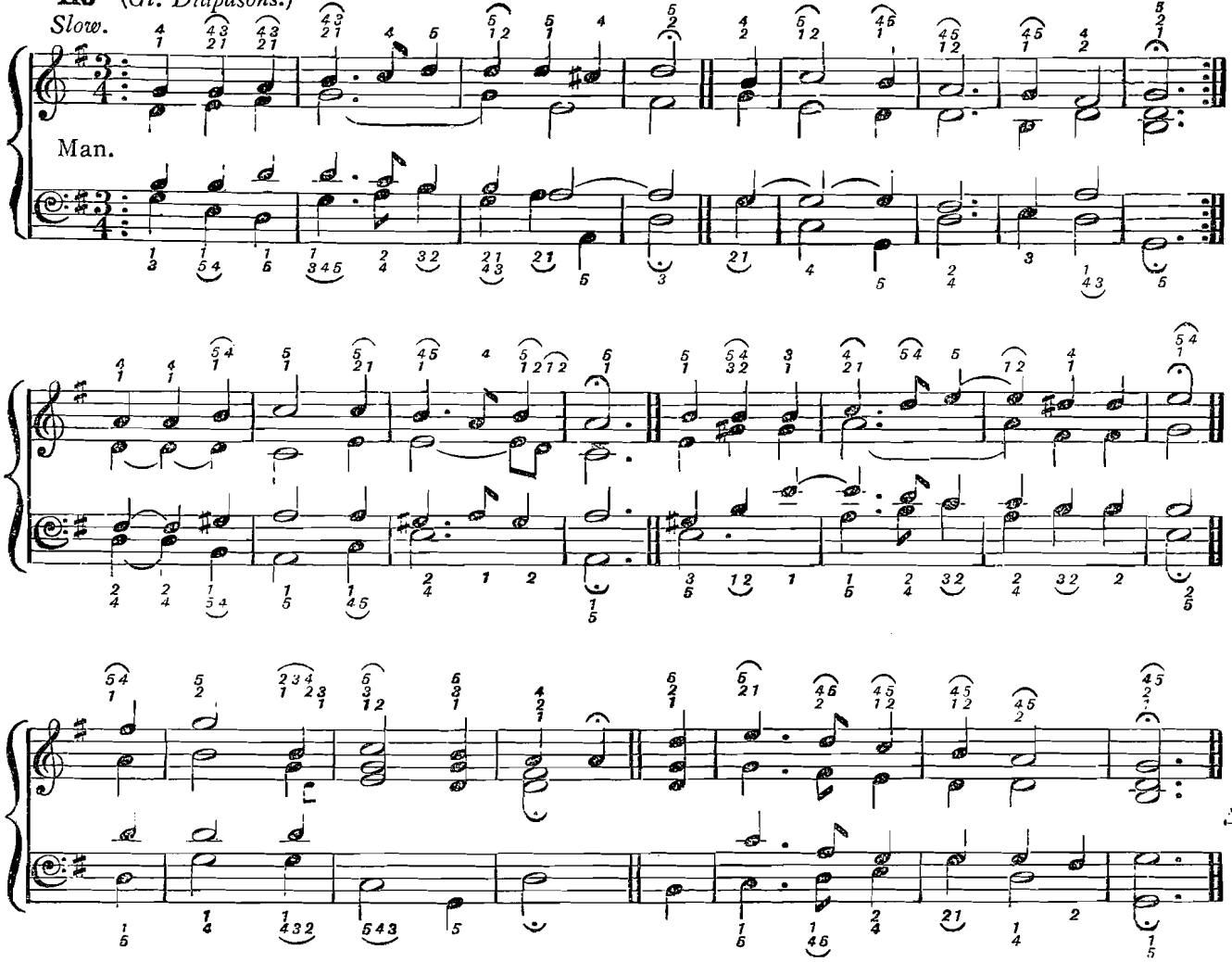
In arranging four-part music for the third method of playing, above mentioned, it will sometimes happen that the left hand is unable to stretch the interval between the tenor and alto parts. If this is the case the two notes must be inverted, or played in any position most convenient.

Harmonised by J. S. Bach.

110 (*Gt. Diapasons.*)

Slow.

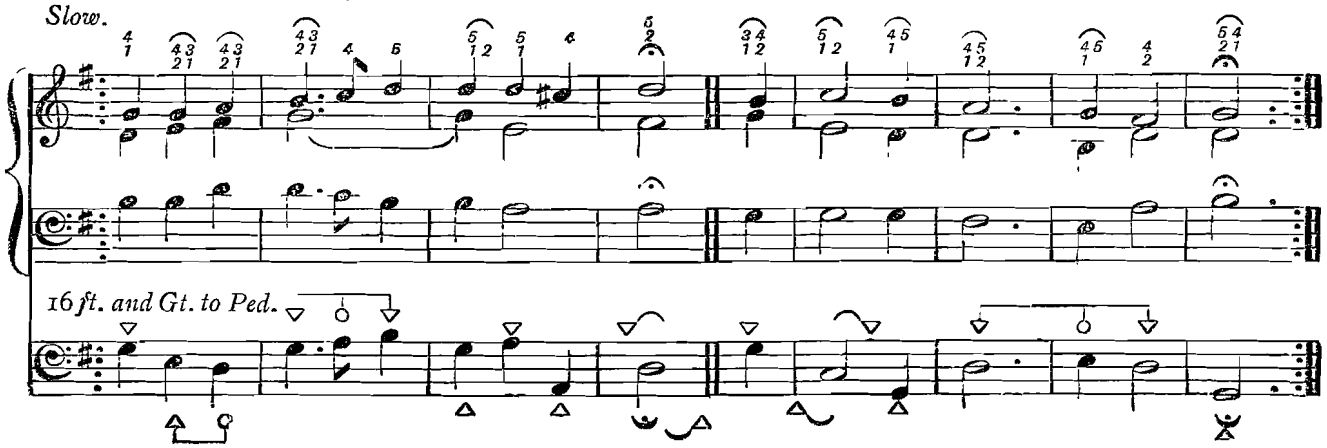
Man.

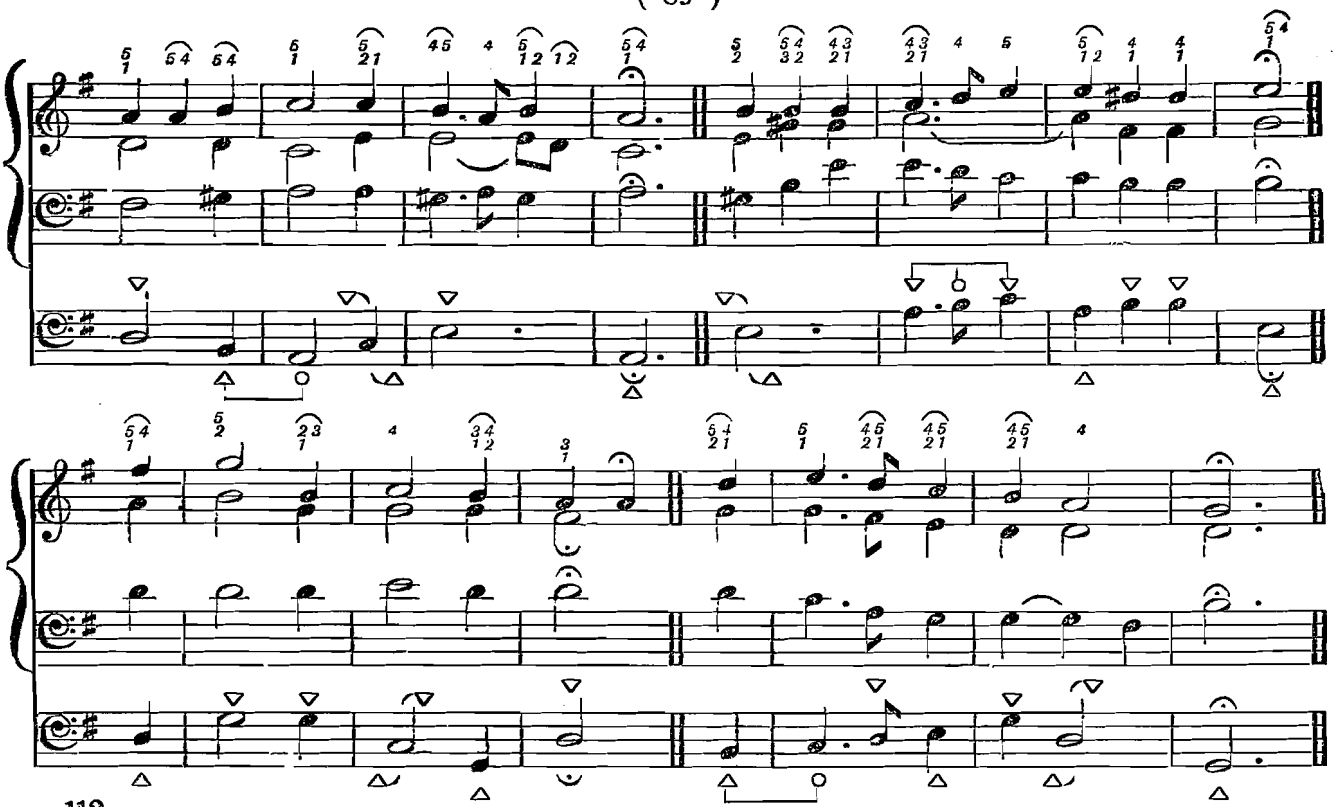


111 (*Gt. to 4 ft. Sw. coupled.*)

Slow.

16 ft. and Gt. to Ped.





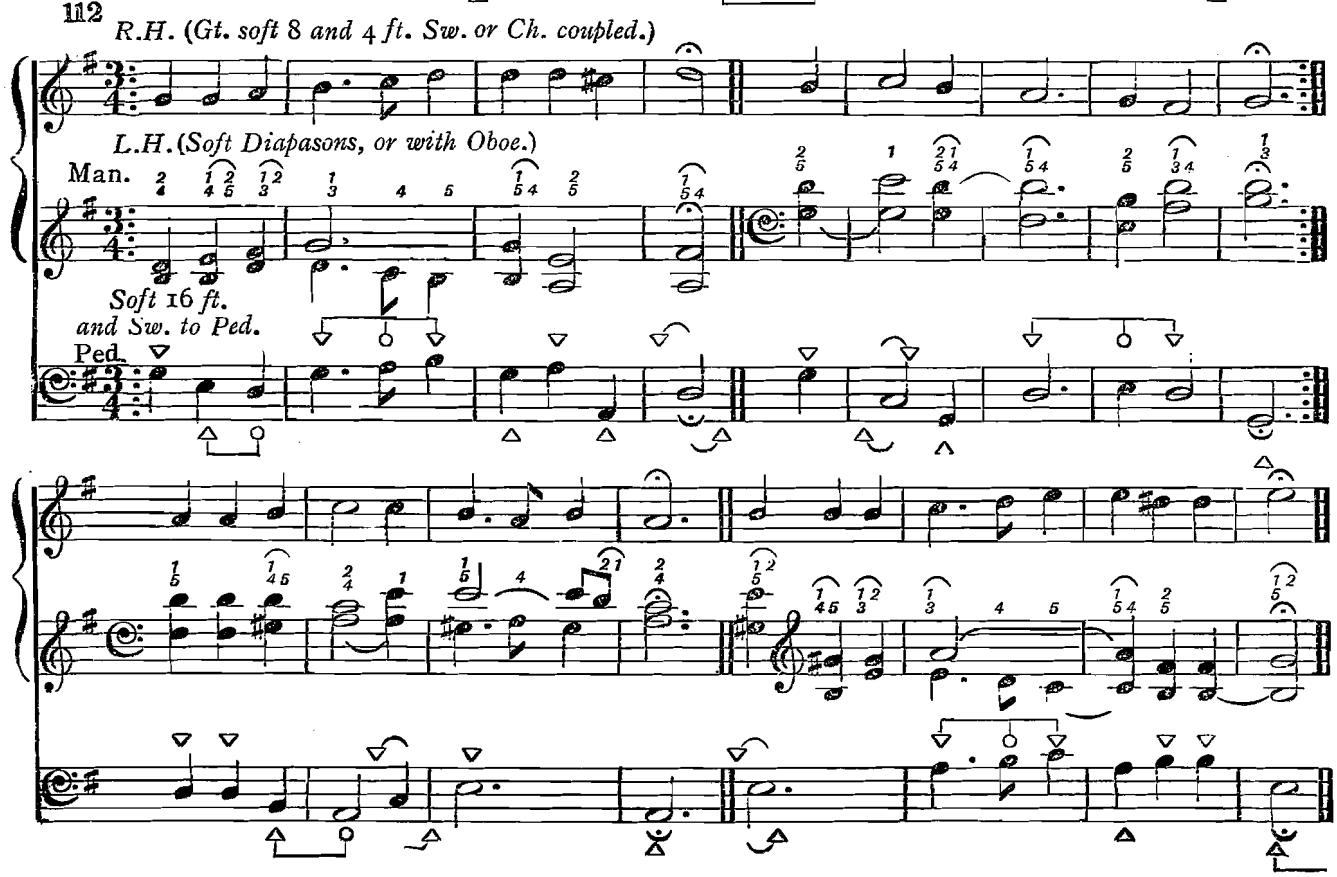
112 *R.H. (Gt. soft 8 and 4 ft. Sw. or Ch. coupled.)*

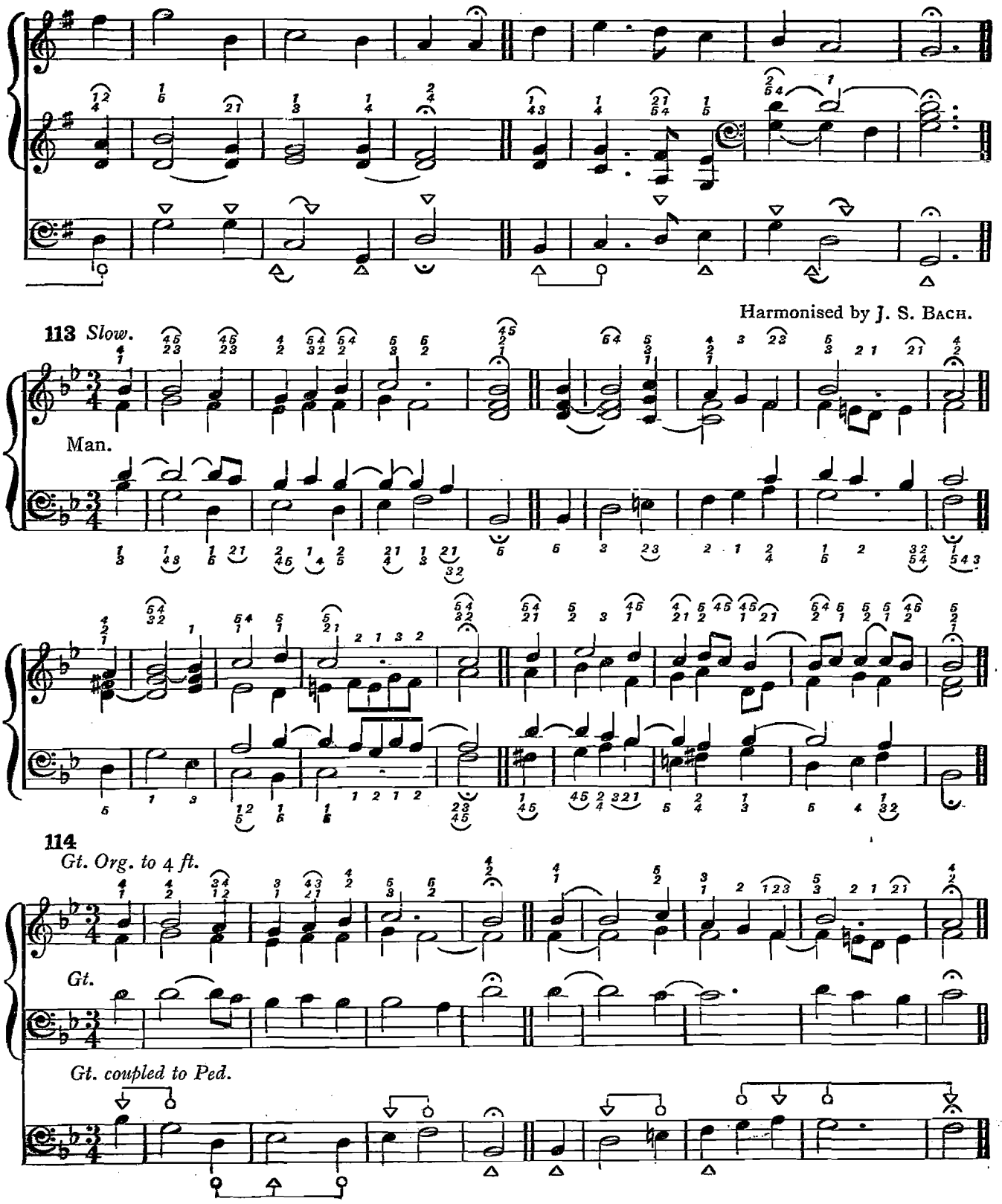
L.H. (Soft Diapasons, or with Oboe.)

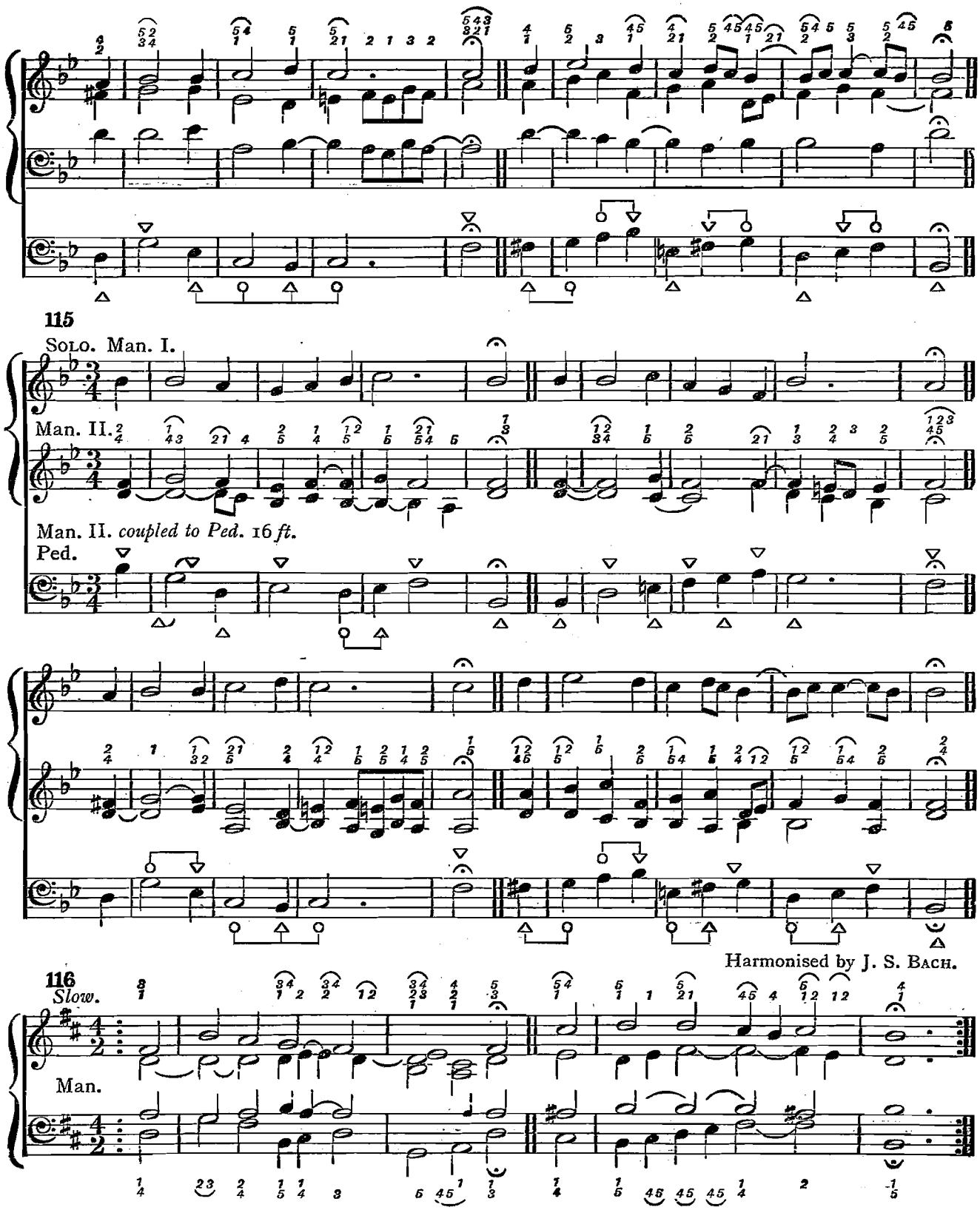
Man.

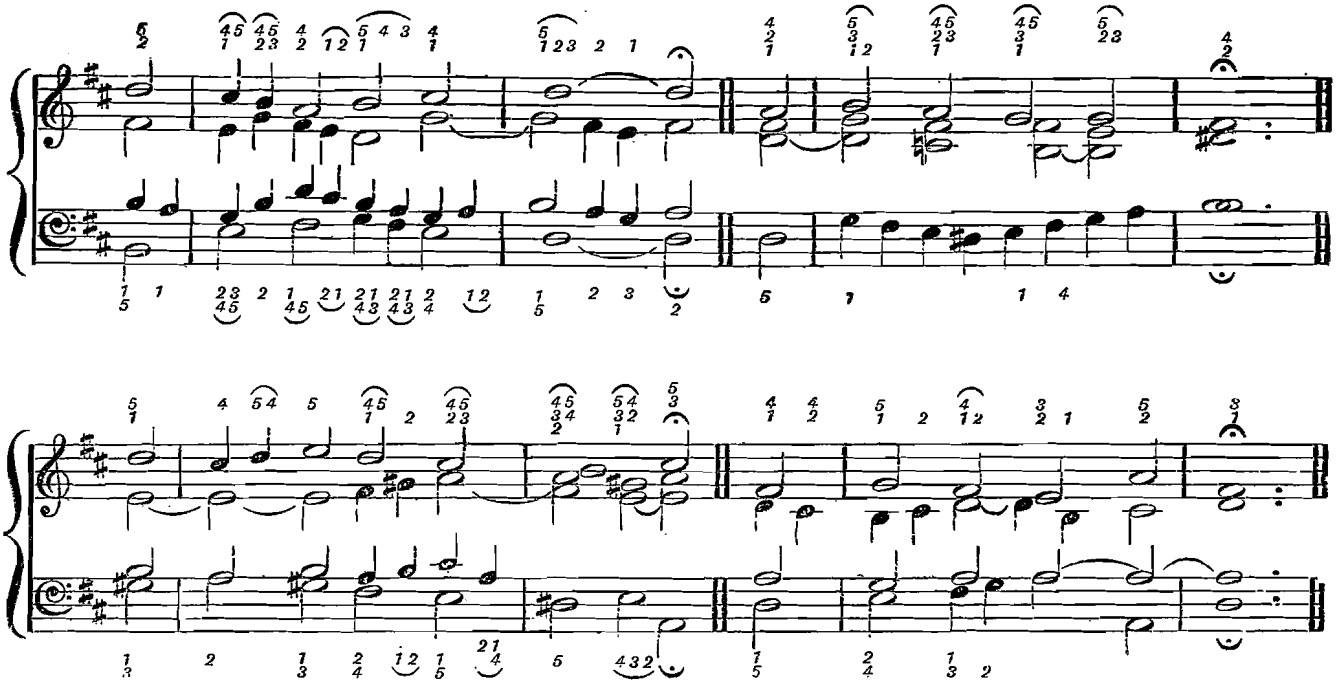
Soft 16 ft. and Sw. to Ped.

Ped.




Harmonised by J. S. Bach.
113 Slow.
Man.
114
Gt. Org. to 4 ft.
Gt.
Gt. coupled to Ped.

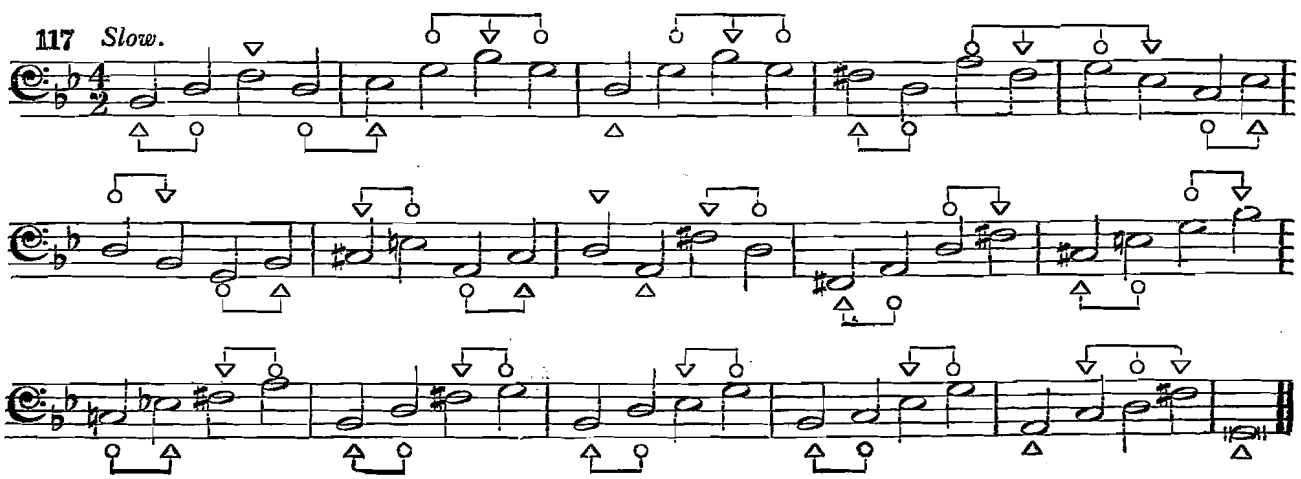

115
Solo. Man. I.
Man. II.
Man. II. coupled to Ped. 16 ft.
Ped.
116
Slow.
Man.
Harmonised by J. S. Bach.



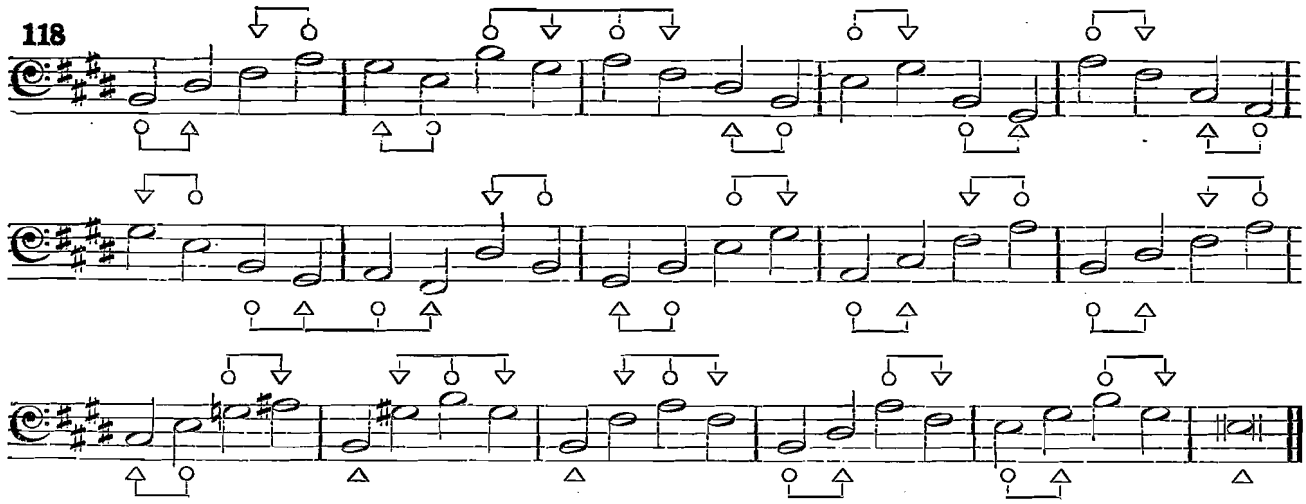
The student should, under his master's direction, arrange the above tune according to the two other methods before described. Pupils having very small hands will find this style of music very difficult, whereas those having hands more than usually large may for themselves devise fingering of an easier kind.

EXTENDED PASSAGES FOR THE FEET.

The student may have noticed that, in pedalling, the interval of a third is often taken by one foot; this is specially useful when one of the keys is a sharp or flat. He is strongly advised to make himself familiar with this system by carefully practising the following exercises:—

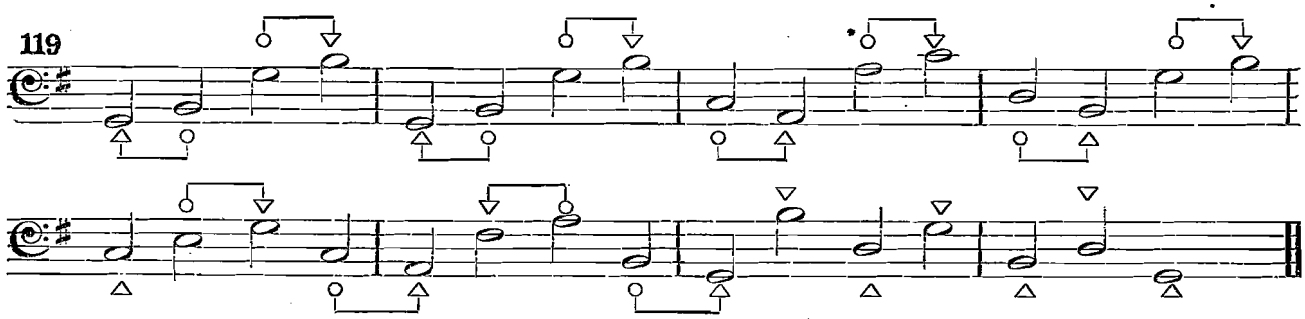


118



In playing the interval of a third on the natural (long) keys with *one* foot, great care must be taken to get the hollow of the foot exactly over the intermediate pedal, otherwise it will be made to speak either by the toe or heel. The foot must be placed rather sideways.

119



EXPRESSION.

105. The organ may be said to be deficient, as an instrument, in two respects; the player cannot vary his tone by the character or force of his touch (as on the pianoforte), nor can he glide from one note to another (as on the violin).

It is evident therefore that the organist who wishes to play with a proper expression of feeling is chiefly dependent on—

(1) The art of phrasing.

(2) The contrast between the *legato* and *staccato* style.

(3) The use of the Swell pedal.

(4) The selection of stops.

The first and second of these sources of expression are but rarely mastered; they may, indeed, be looked upon as a test of the *musicianship* of an organist.

To phrase properly a player must possess not only knowledge but taste; the intentions and meaning of a composer must first be duly appreciated intellectually, and then practically brought out, care always being taken to avoid on the one hand a *weak* performance caused by an insufficiently broad *outline*, and on the other hand an *exaggerated* reading caused by bringing the peculiarities of the composer (or the composer and player mixed) into undue prominence. In the former case the attentive hearer traces too little of the spirit of the author; in the latter too much of the egotism of the player.

In pianoforte music, until quite our own times, very few indications of phrasing and other delicate forms of expression were to be found; and although modern composers have striven to remedy this defect, much still depends on the knowledge and taste of the performer. A comparison between one of Handel's "Suites" and any pianoforte piece by Schumann or Chopin will show the progress made in this direction.

In organ music no corresponding progress can be traced, composers and "arrangers" frequently making the great mistake of giving numerous lists of registers, or indicating combinations of stops, the effect of which varies widely in different instruments.

Much therefore has to be attained by an organist besides merely mechanical skill with fingers and feet, or agility in handling the knobs of stops.

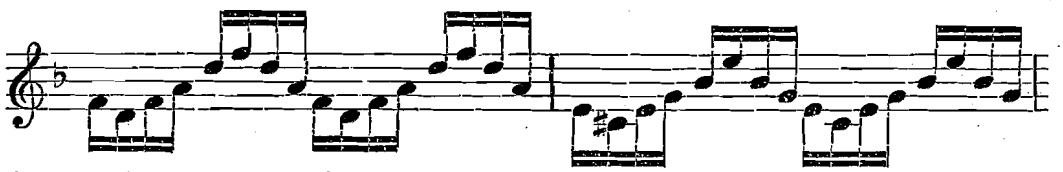
106. In slow movements of an expressive character it is of the utmost importance that the student should aim at something higher than correctness. It will be found that the Swell pedal (if rightly treated) will add largely to the power of phrasing when used in conjunction with the other modes of expression above enumerated; but, on the other hand, the wisest efforts of the fingers to "round a sentence" will be completely frustrated by carelessness in this respect.

107. In playing fugues or other pieces not calling forth the minuter details of expression, care must be taken that the general rendering is broad and dignified. The grandeur or beauty of a fugue consists in the fact that it is constructed so as to be of constantly increasing interest from beginning to end. Several important considerations present themselves if this be borne in mind. First, the full power of the instrument should be judiciously reserved for the climax (probably the *stretto*); and although the enunciation of the subject should not be soft or weak, enough power should be kept in hand to enable the player to add to the strength of tone from time to time. It need hardly be pointed out that nothing but a most vicious taste could suggest the giving out of a fugue-subject on a *tuba mirabilis* or any other "fancy" stop.

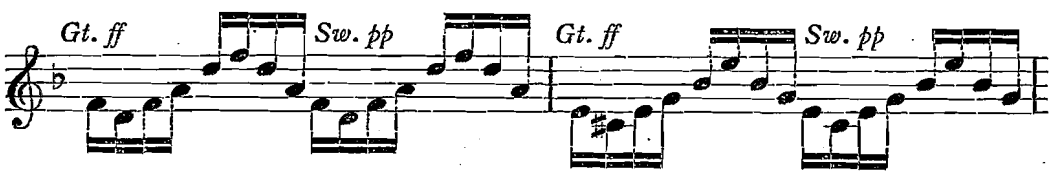
Next, it is certain that if the interest of a fugue is to go on increasing, the *episodes* (those portions of a fugue which do not actually include the working out of the subject) must not be severed from the context by being played on a different manual, or with a strongly-contrasted quality of tone. The notion that a fugue is made more interesting by suddenly skipping from the Great Organ in order to play an episode on the Swell Manual (with much pumping) cannot be too strongly condemned. Thus to cut a slice out of the middle of the work completely destroys its unity of purpose. It sometimes may happen that the episodes require even greater power and vigour of style to keep them up to the level of the fugue.

Although these remarks apply to the majority of fugues, the reader is of course aware that there are many others of so calm and melodious a character as to require special treatment, such, for example, as the beautiful "short" Fugue in E minor by Bach. Mendelssohn's Fugue in G major is by some organists brought to a *pianissimo* ending; in this and many other cases the student will have to exercise his judgment.

108. In classical organ-music passages are often found in which each figure occurs twice, *e.g.* :—



It is hoped that the student will never be so imaginative as to suppose that the composer intended to represent by this means a series of remarkable *echoes*. His good sense should protest against the following caricature of these passages, although it calls forth rapidity of bodily action :—



Enough has been said to prove to the student that his taste and education will mould and stamp their mark on his organ-playing; and any want of refinement will be quickly traced by the best class of hearers, even if he should succeed in making himself an agile gymnast of the first order.

Lastly, in organ-playing, as in every other branch of art, the *object* for which the labour of study is undertaken and persevered in will assuredly influence the result. The performer whose motive is selfish pleasure or a love of laud will drift into a style of playing reflecting his frame of mind; but he who works on with purity of purpose, realising the nobility of his study, and, better still, desiring to devote his studies to some high aim, will find that he has unknowingly woven a chain which will bind his hearers to him in a bond of mutual sympathy.

CONCLUSION.

The following five short pieces are intended to represent different styles of organ music, and give the pupil a wider sphere of practice, while his teacher is selecting a course of organ pieces for him from the works of the best authors.

In No. 120 (Allegretto in F) he will find opportunities of phrasing and using the Swell pedal with good effect.

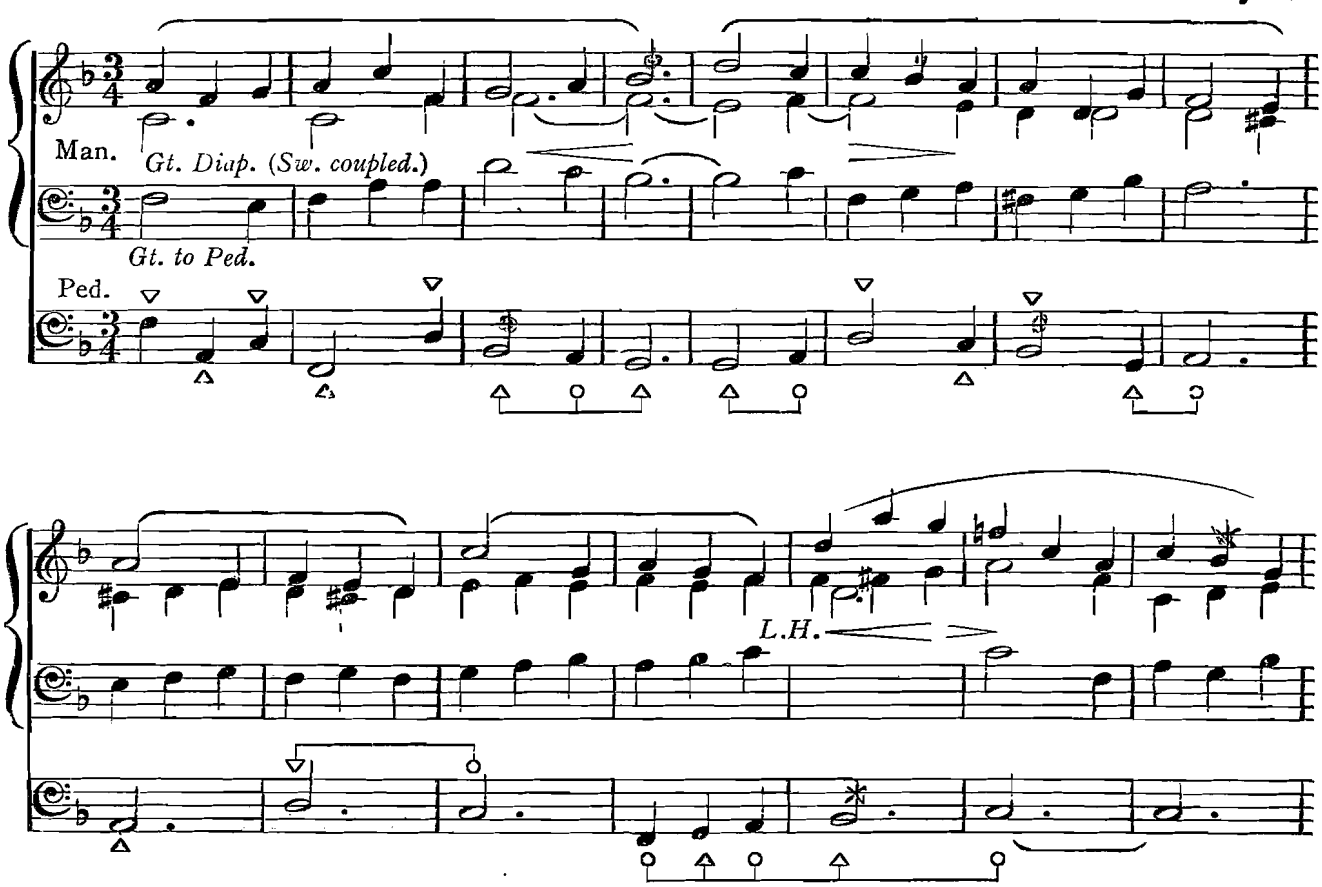
In No. 121 (Andante in A) he will, in addition to the above, be able to practise the playing of a melody with the left hand while the right has a free accompaniment.

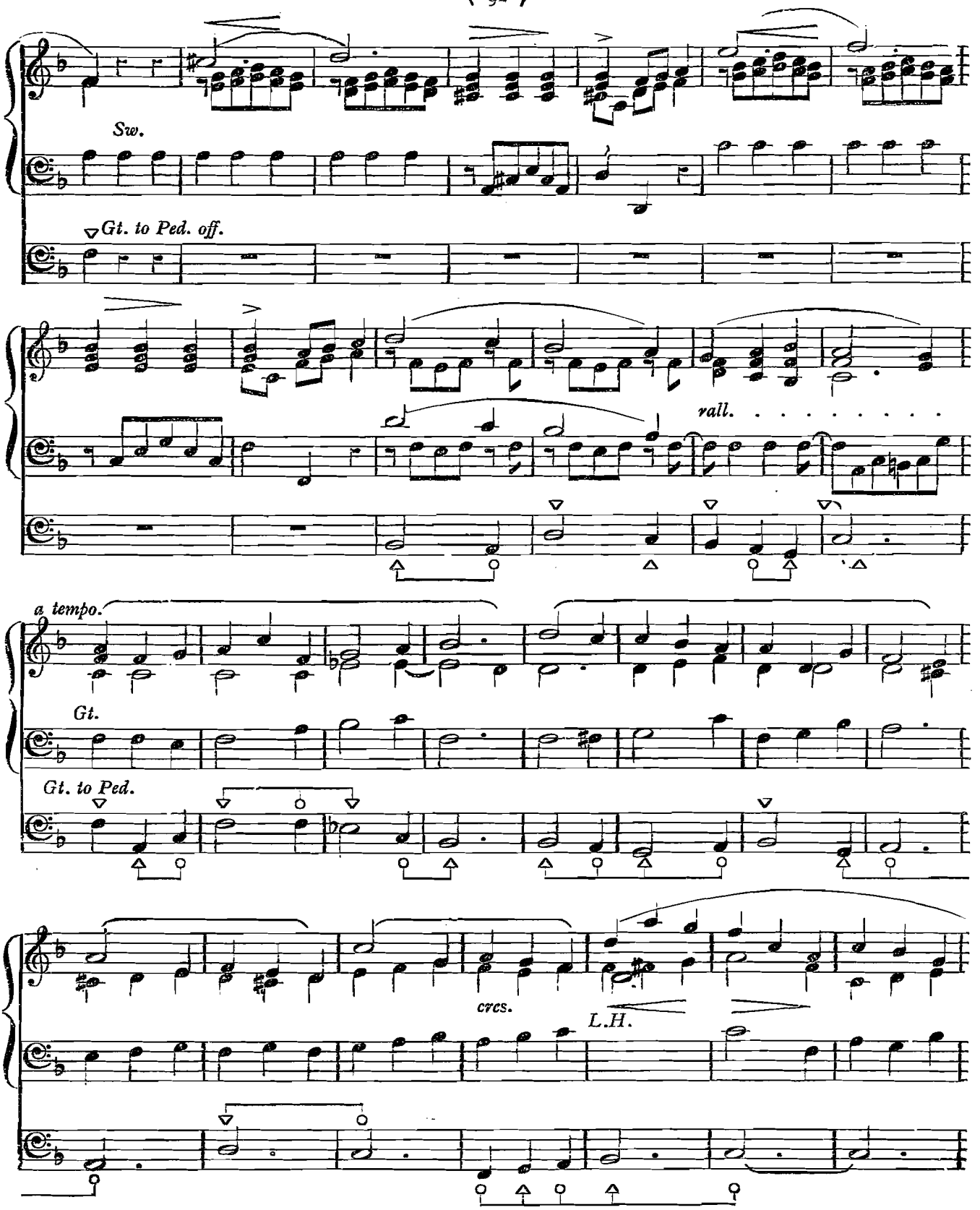
In No. 122 (Fantasia in E minor) are *staccato* chords which must be played freely from the wrist, and wrist only, all the fingers being taken off the keys precisely together; it also contains passages which must be passed from one hand to the other without any break or inequality.

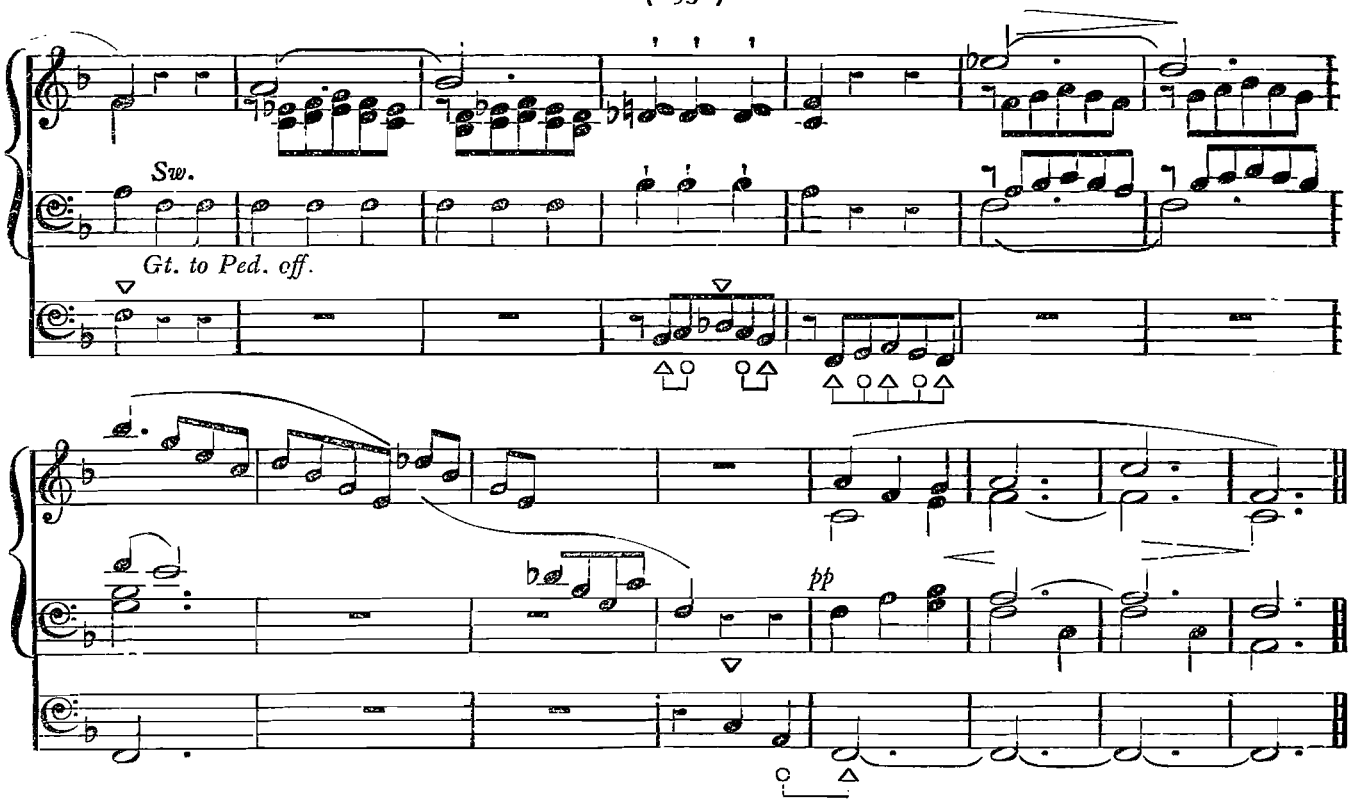
In No. 123 (Adagio in E flat) he will find more scope for management of stops, &c., than in the preceding movements.

In No. 124 (Prelude and Fughetta) he will find that rapid changes of fingers are necessary in order to obtain a true *legato*. In the *coda* (*presto*) it is of importance that the hands should be so mutually supporting and equally balanced as to make it sound as if one hand only were used. As is usual in passages of this kind, the tails of notes to be played with the right hand are turned up; those to be played with the left, down.

120 ALLEGRETTO. J. S.



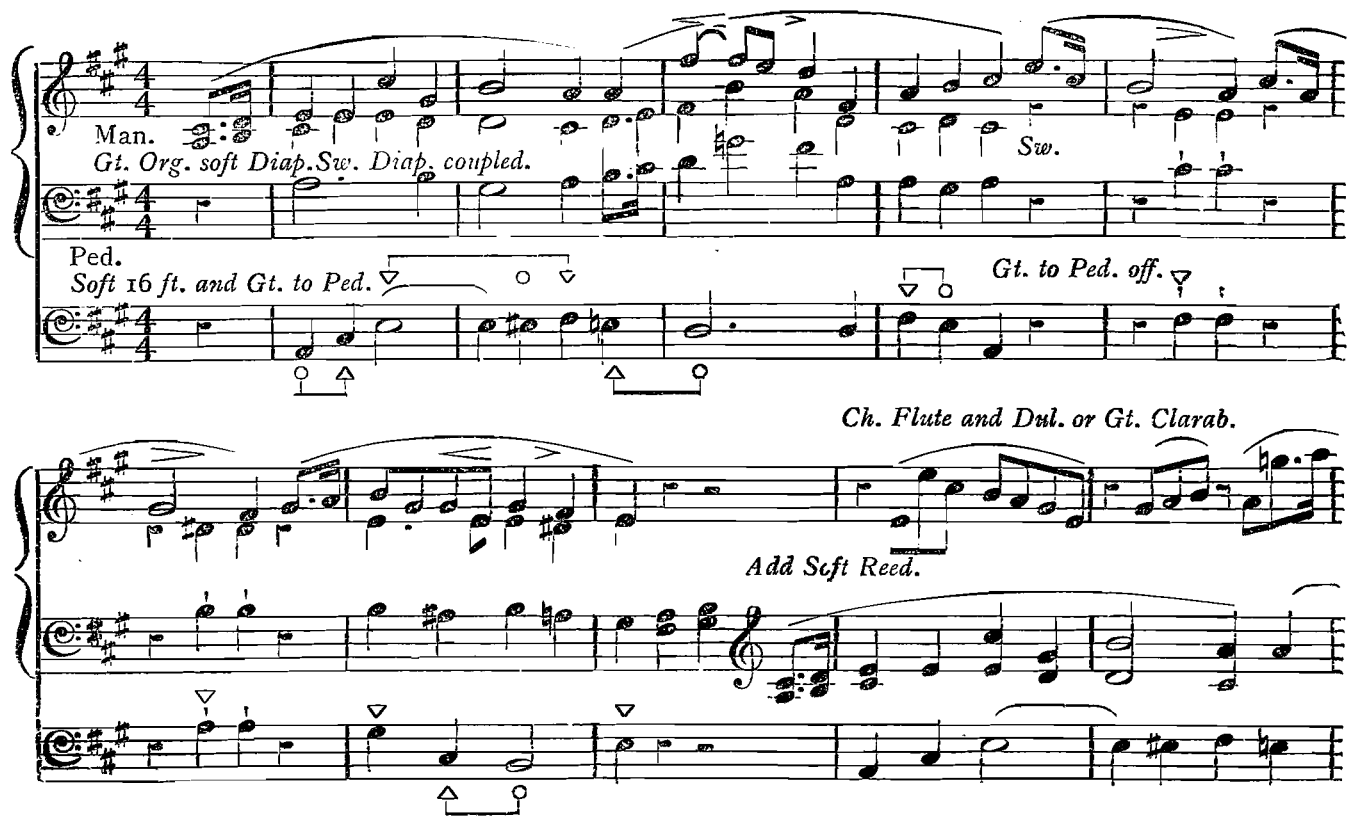

Sw.
Gt. to Ped. off.
rall.
a tempo.
Gt.
Gt. to Ped.
cres.
L.H.

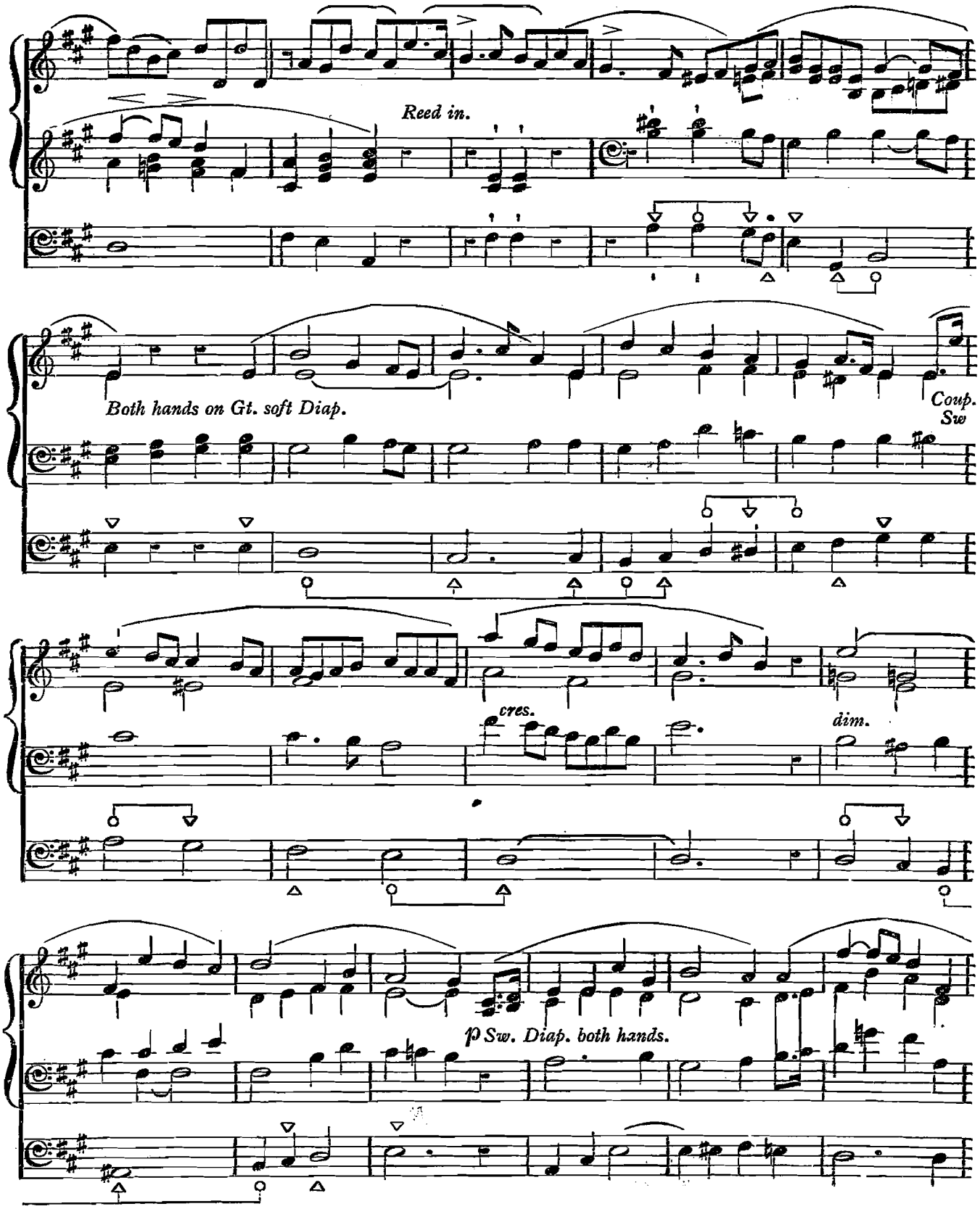


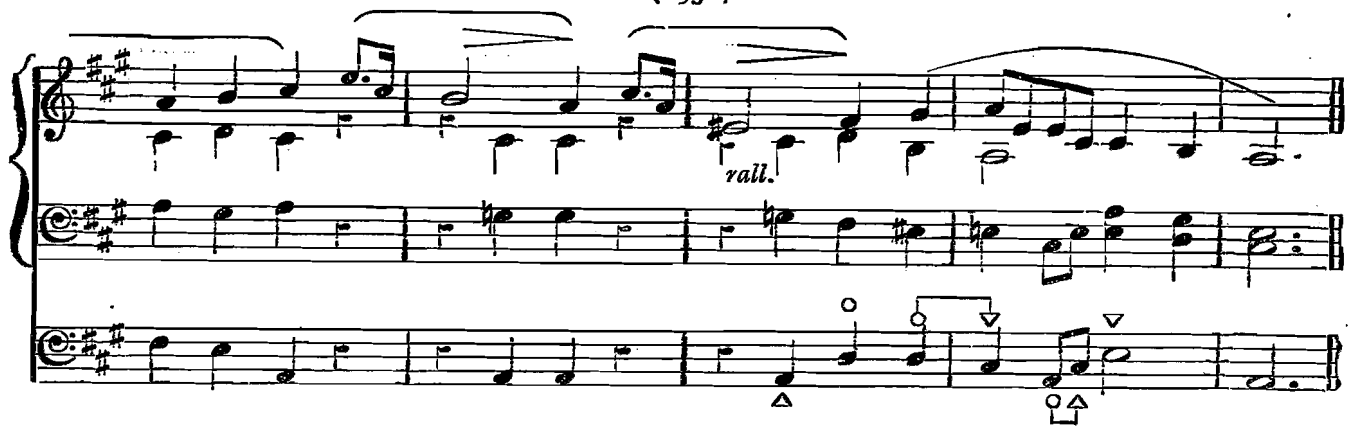
121

ANDANTE.

J. S.

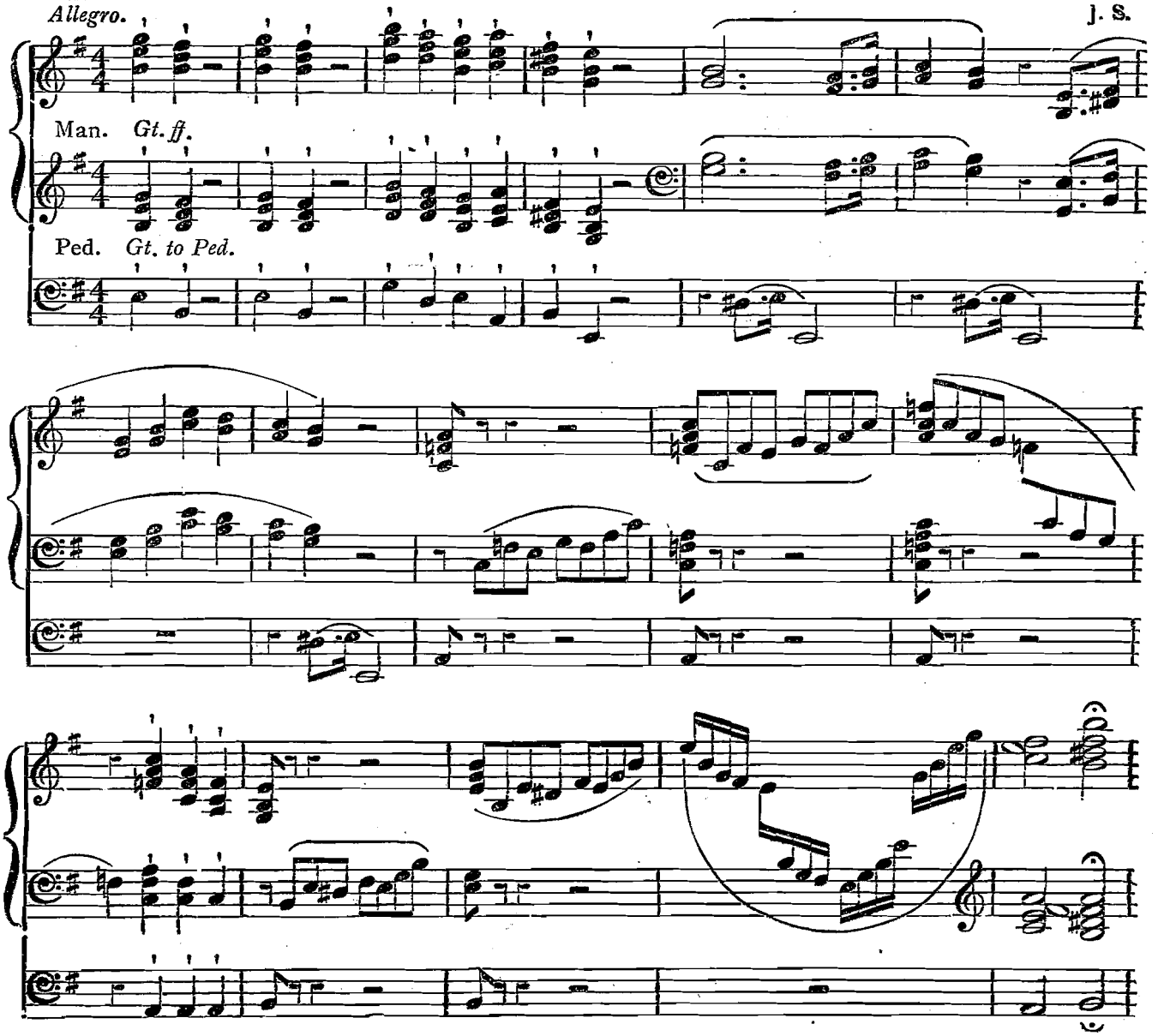


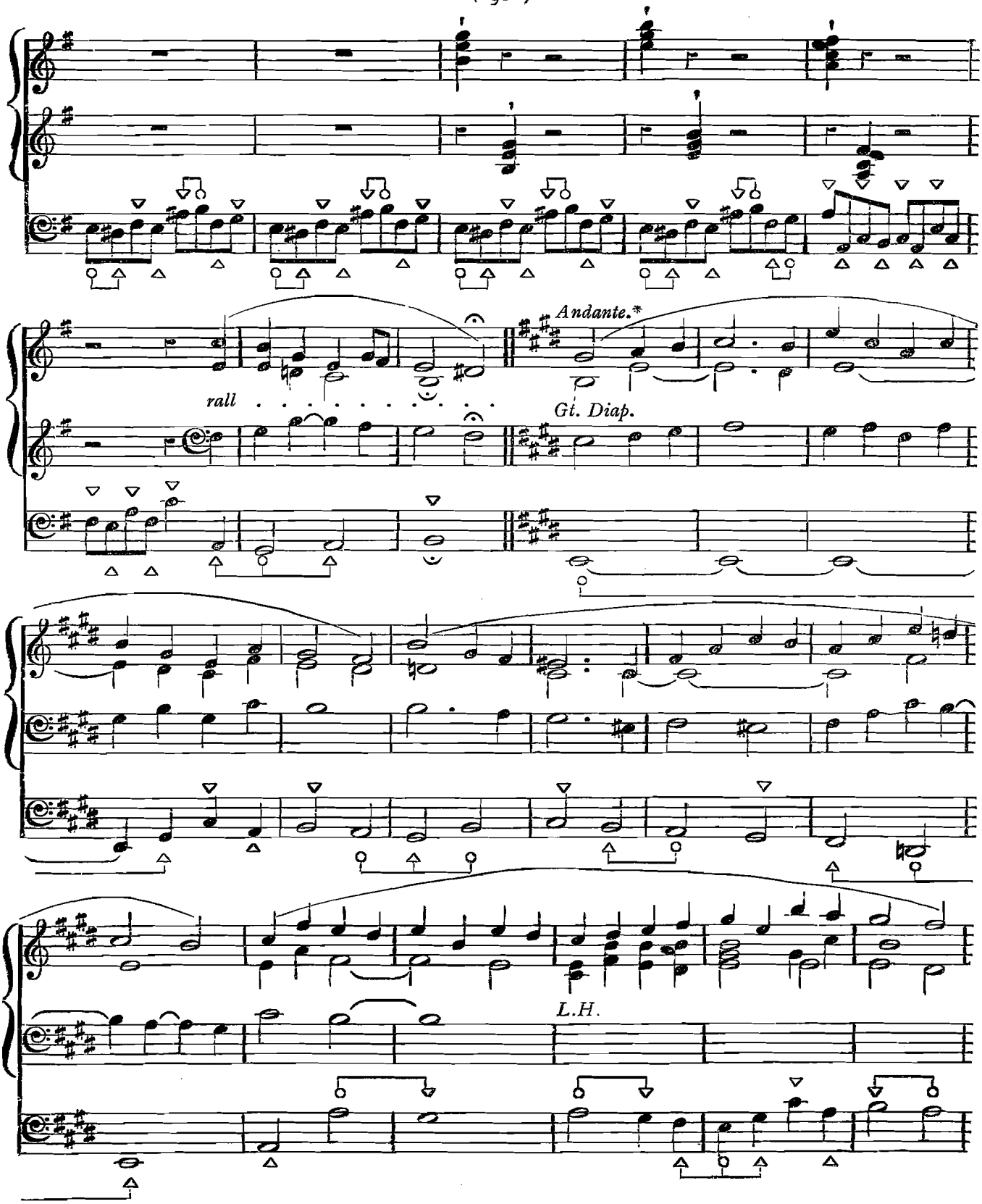

Reed in.
Both hands on Gt. soft Diap.
Coup. Sw
cres.
dim.
p Sw. Diap. both hands.



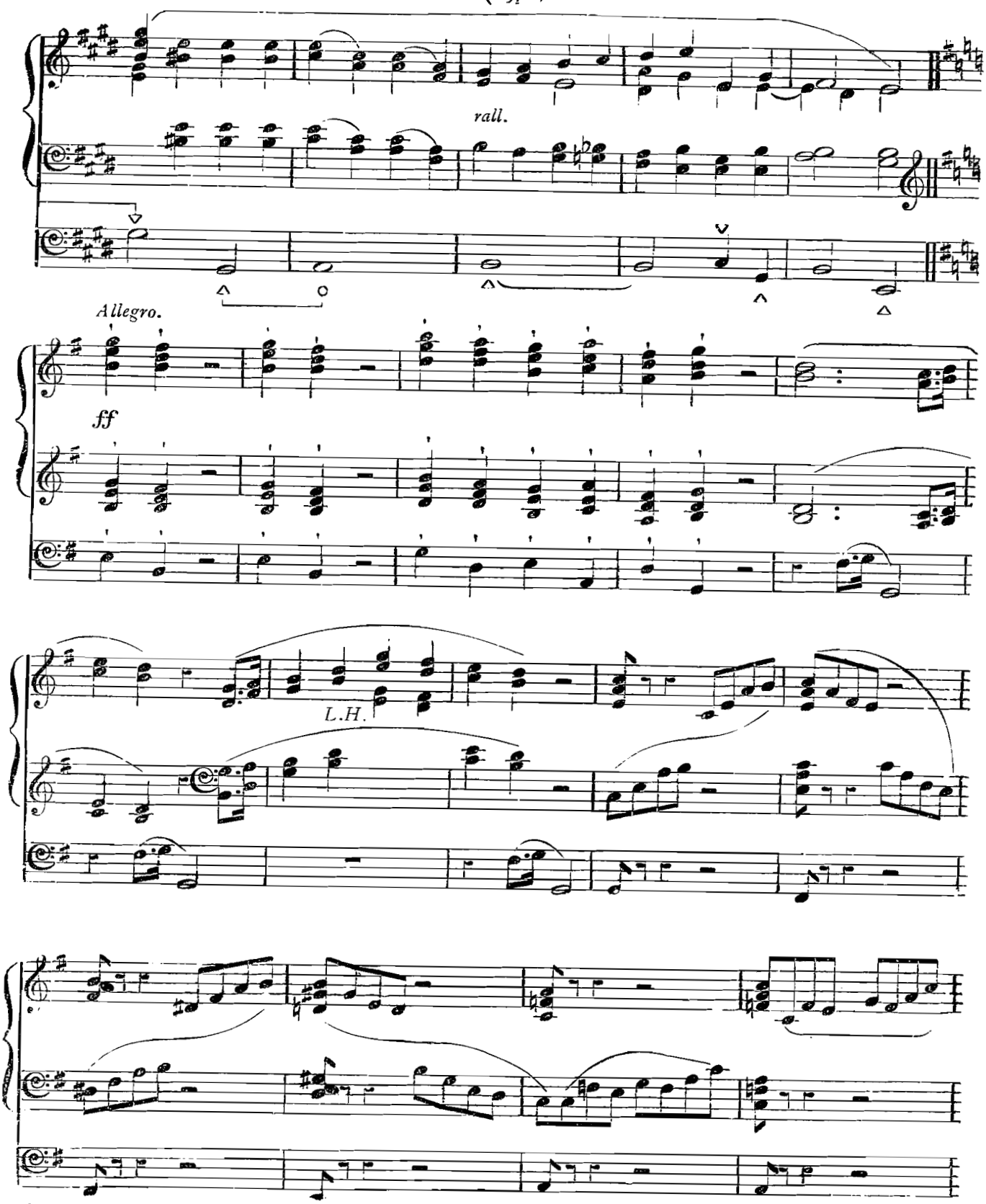
122 FANTASIA.

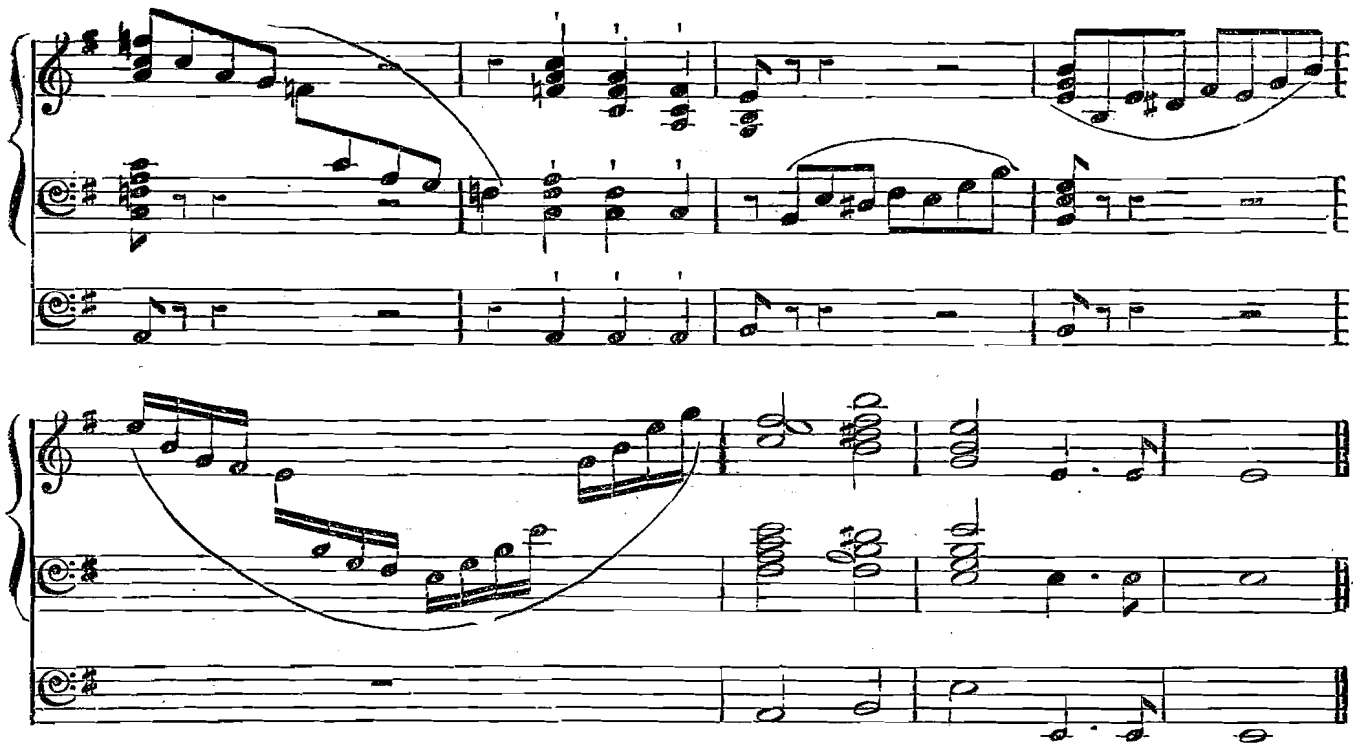
Allegro. J. S.





* In five bar rhythm


rall.
Allegro.
ff
L.H.



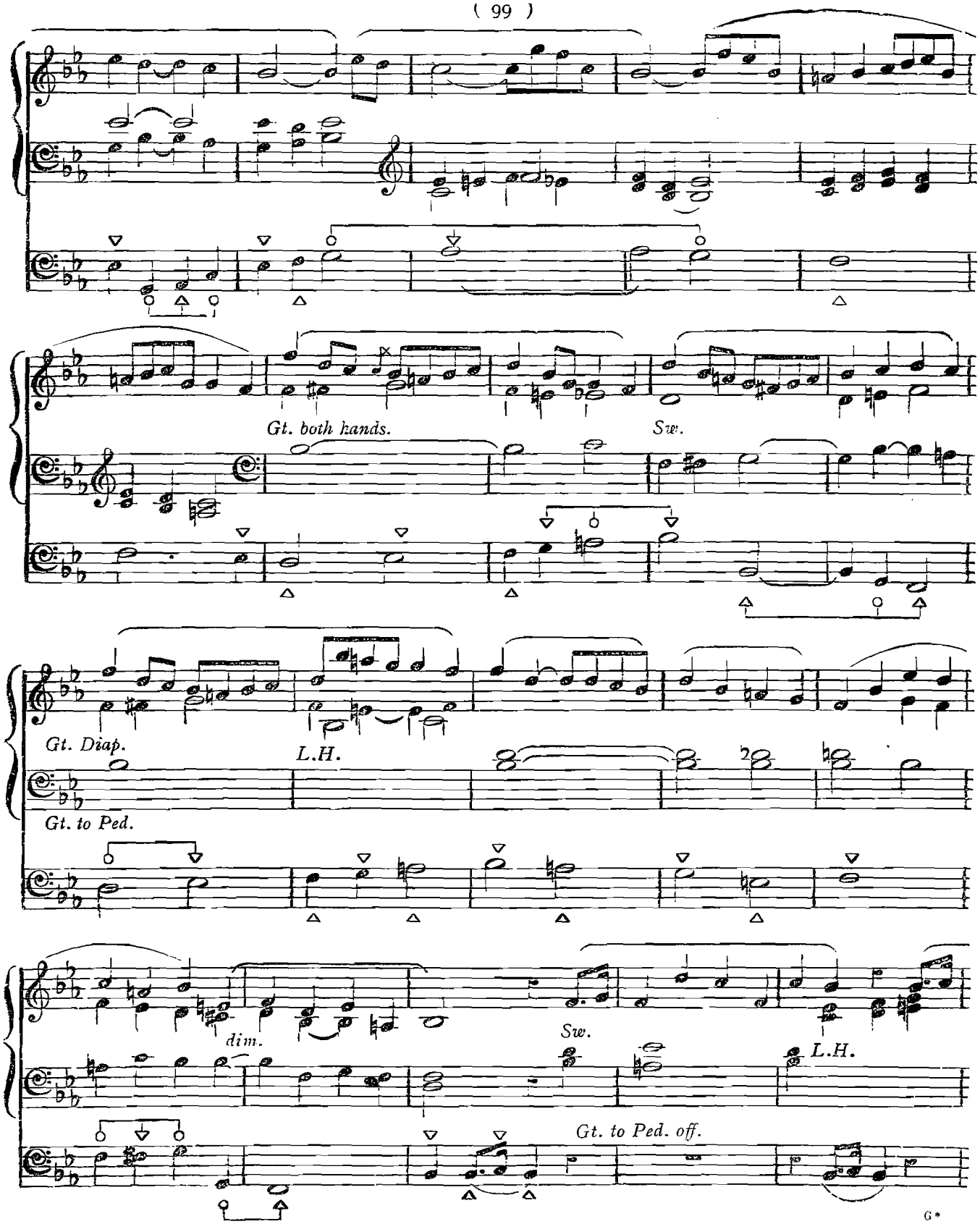
123 ADAGIO. J.S.

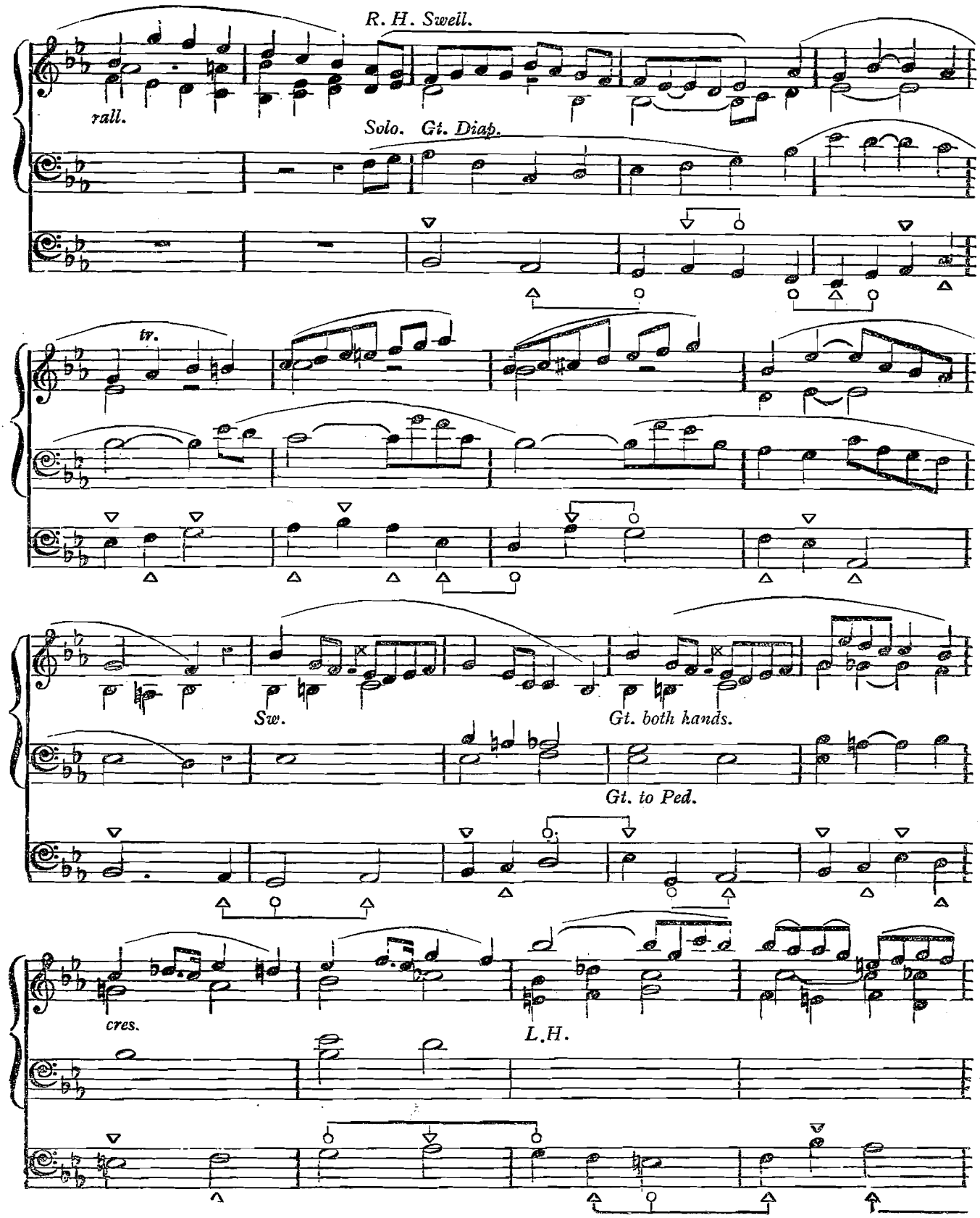
Man. *Swell. p* *L.H.*

Ped. *Soft 16 ft. and Sw. to Ped.*

Solo. Clarab. Gt.

Sw.


Gt. both hands.
Sw.
Gt. Diap.
L.H.
Gt. to Ped.
dim.
Sw.
L.H.
Gt. to Ped. off.


R. H. Swell.
rall.
Solo. Gt. Diap.
tr.
Sw.
Gt. both hands.
Gt. to Ped.
cres.
L.H.

Gt. Clar.

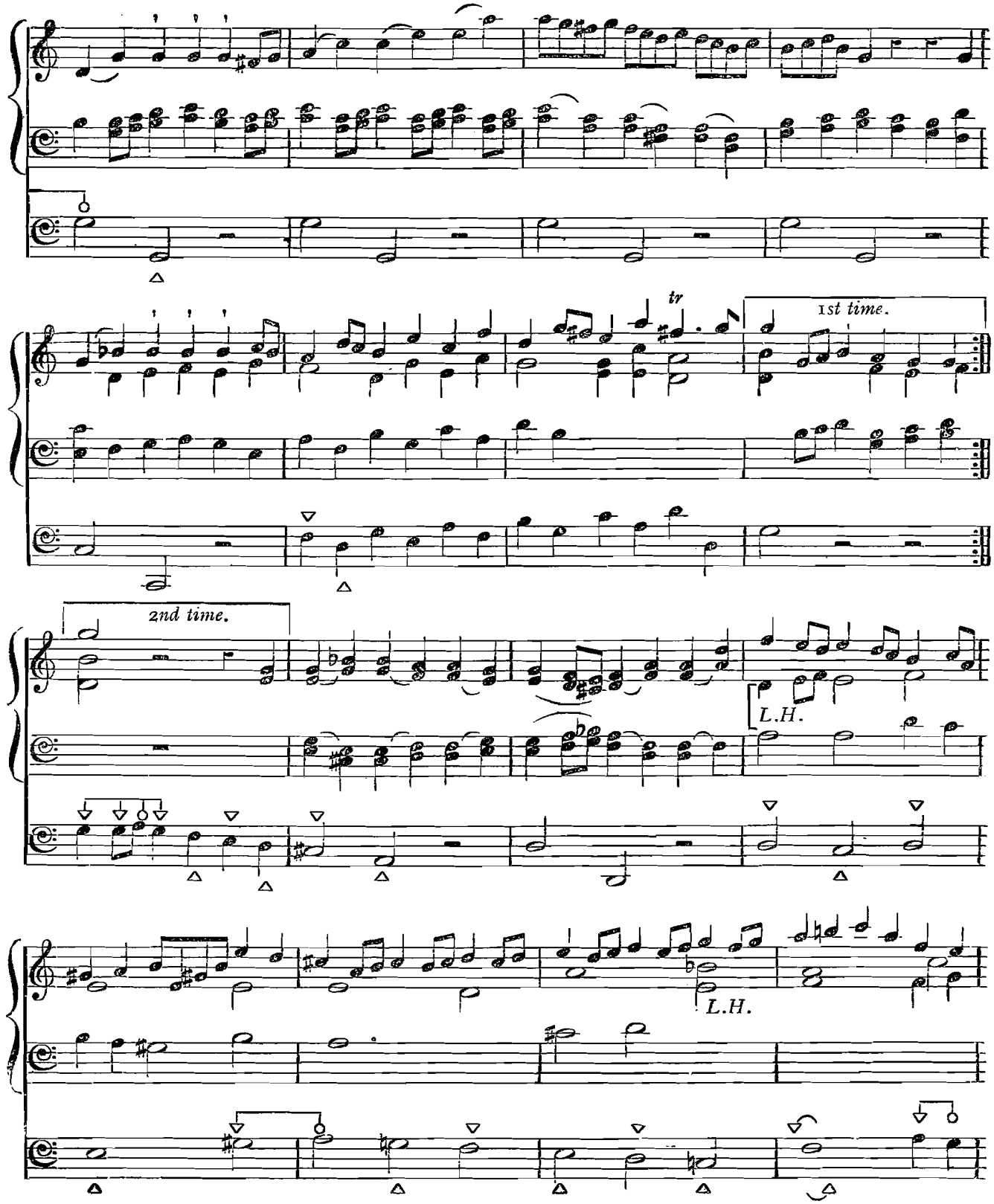
dim. *rall.* *tempo.* *Sw. p* *rall.*

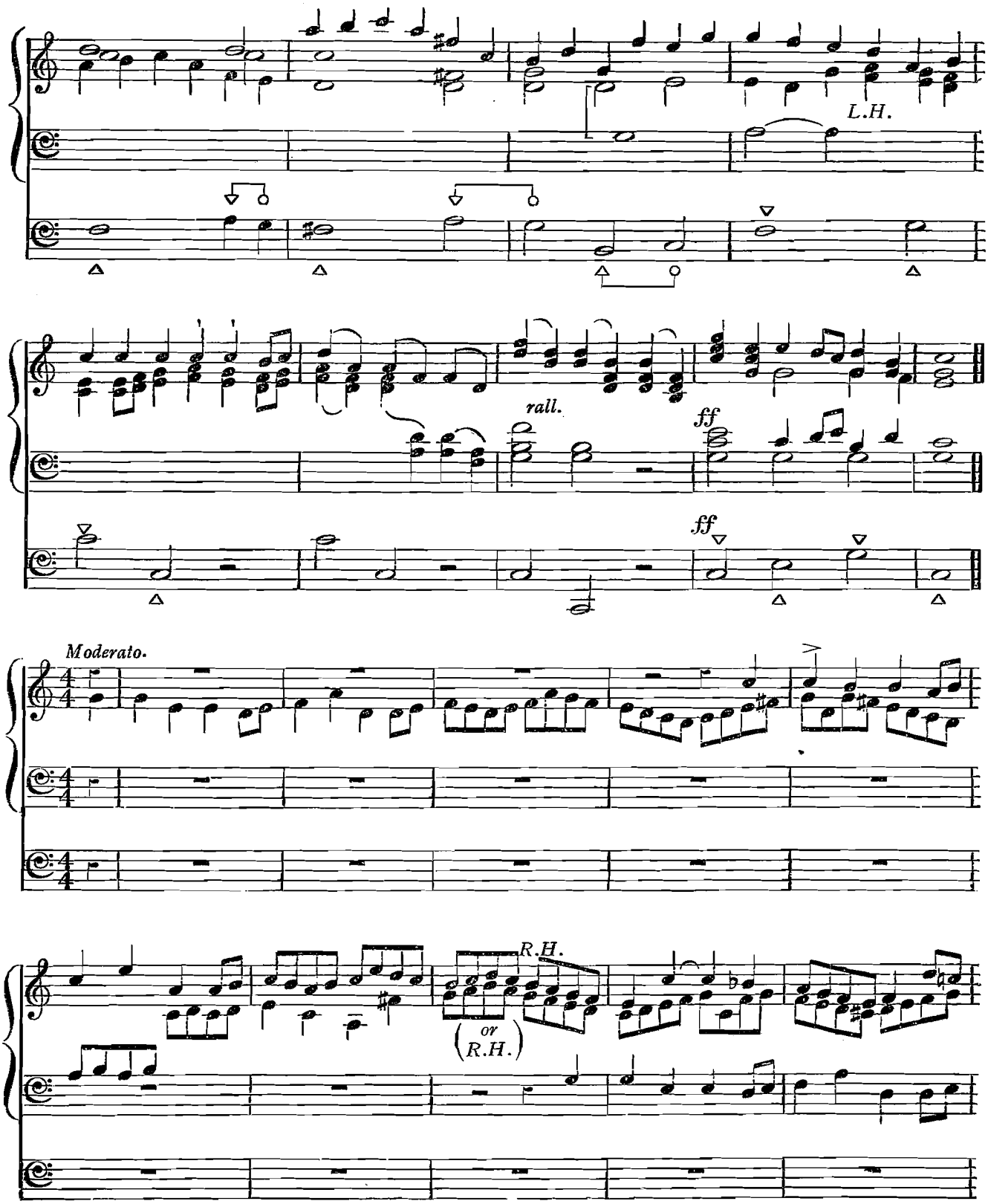
124 PRELUDE AND FUGHETTA. J. S.

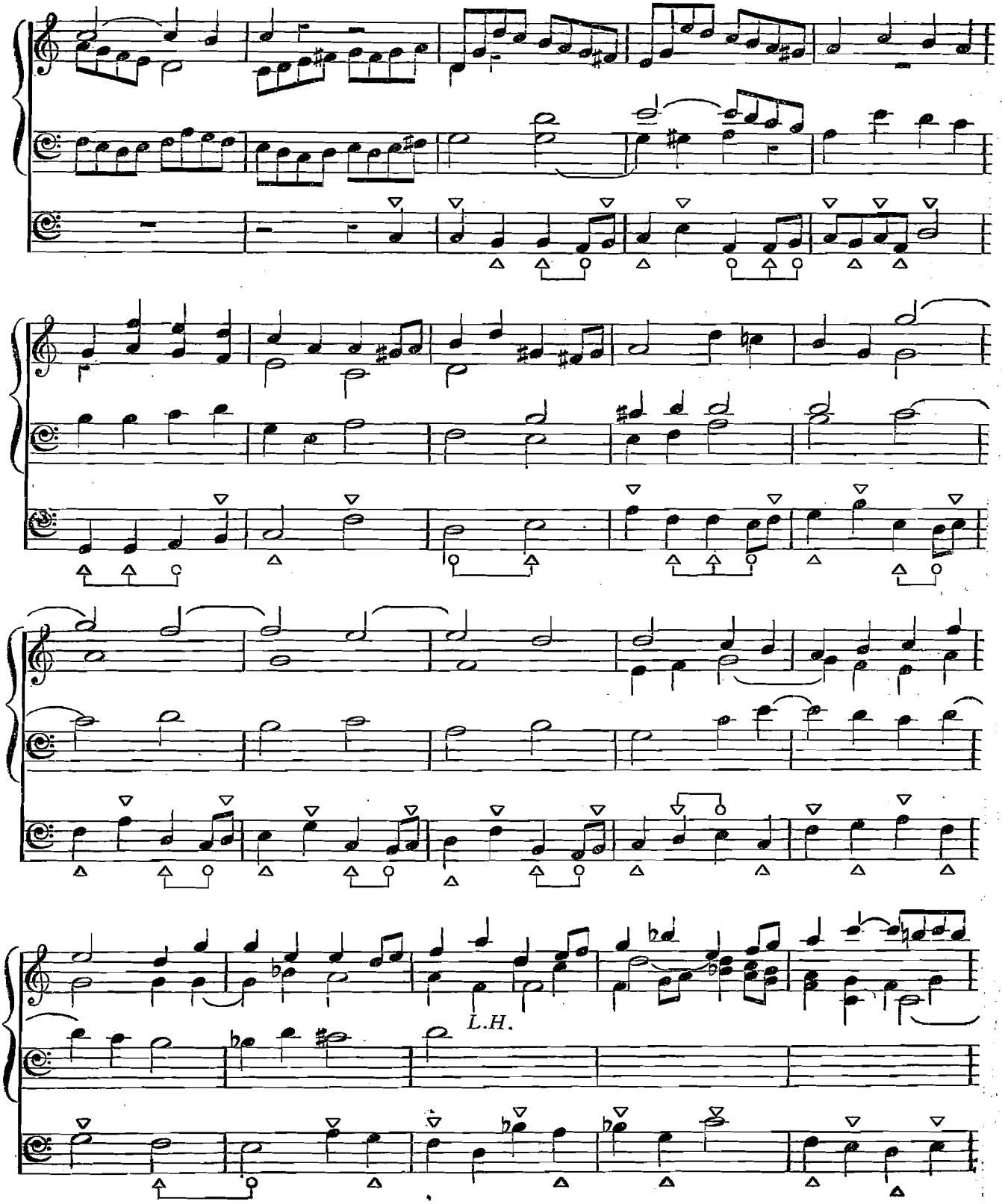
Allegro moderato.

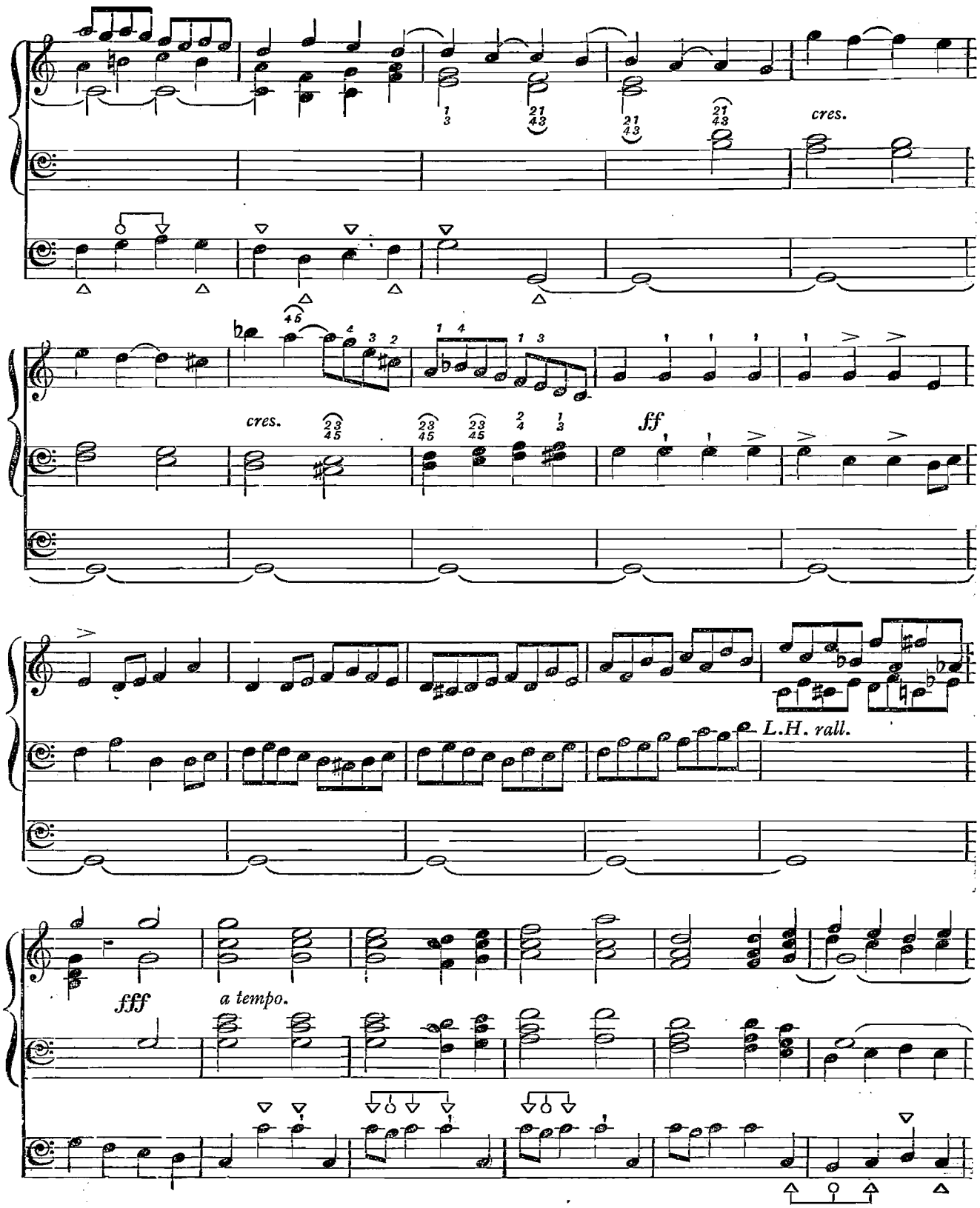
Man. *Gt. f.* *L.H.* *L.H.*

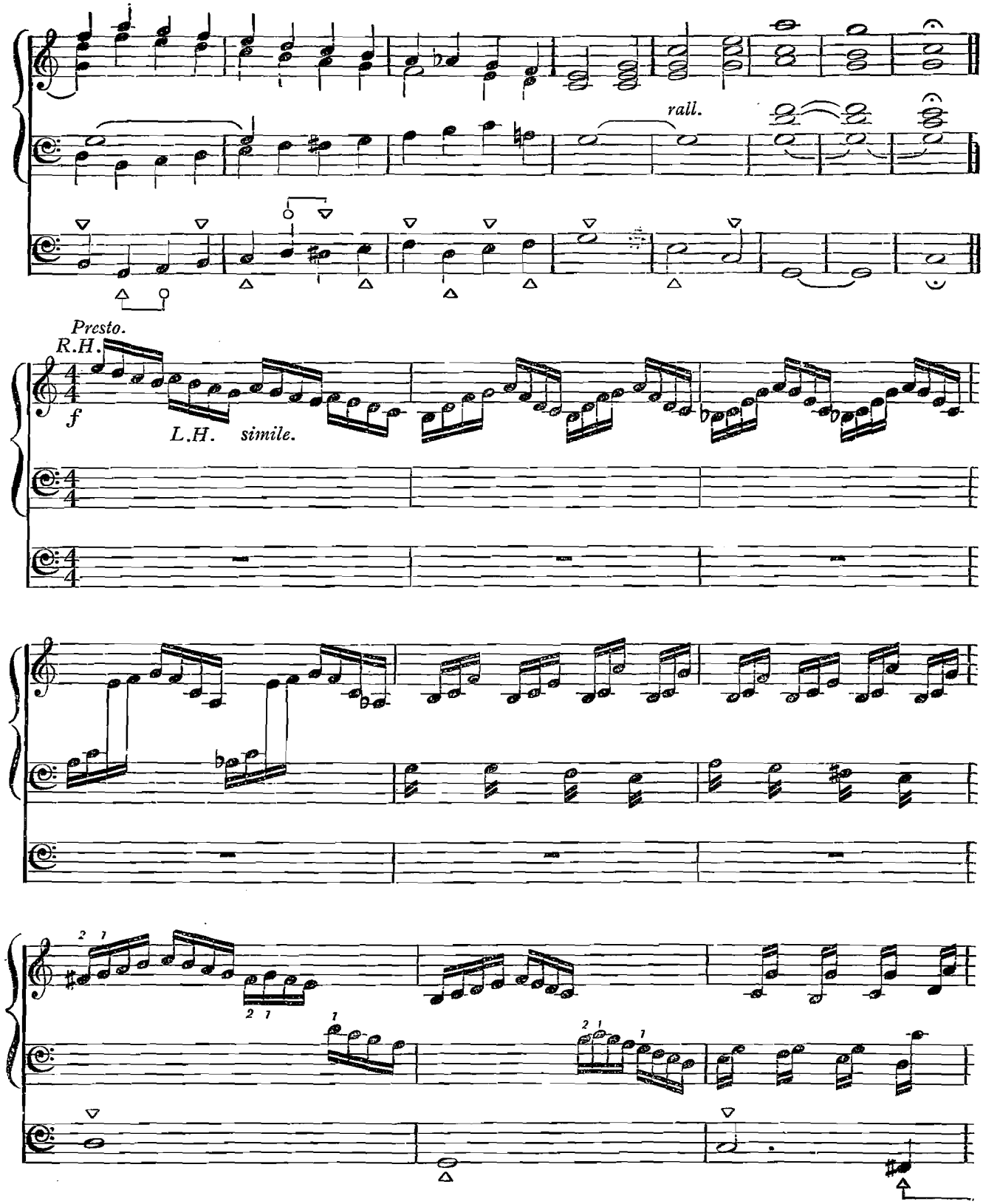
Ped.

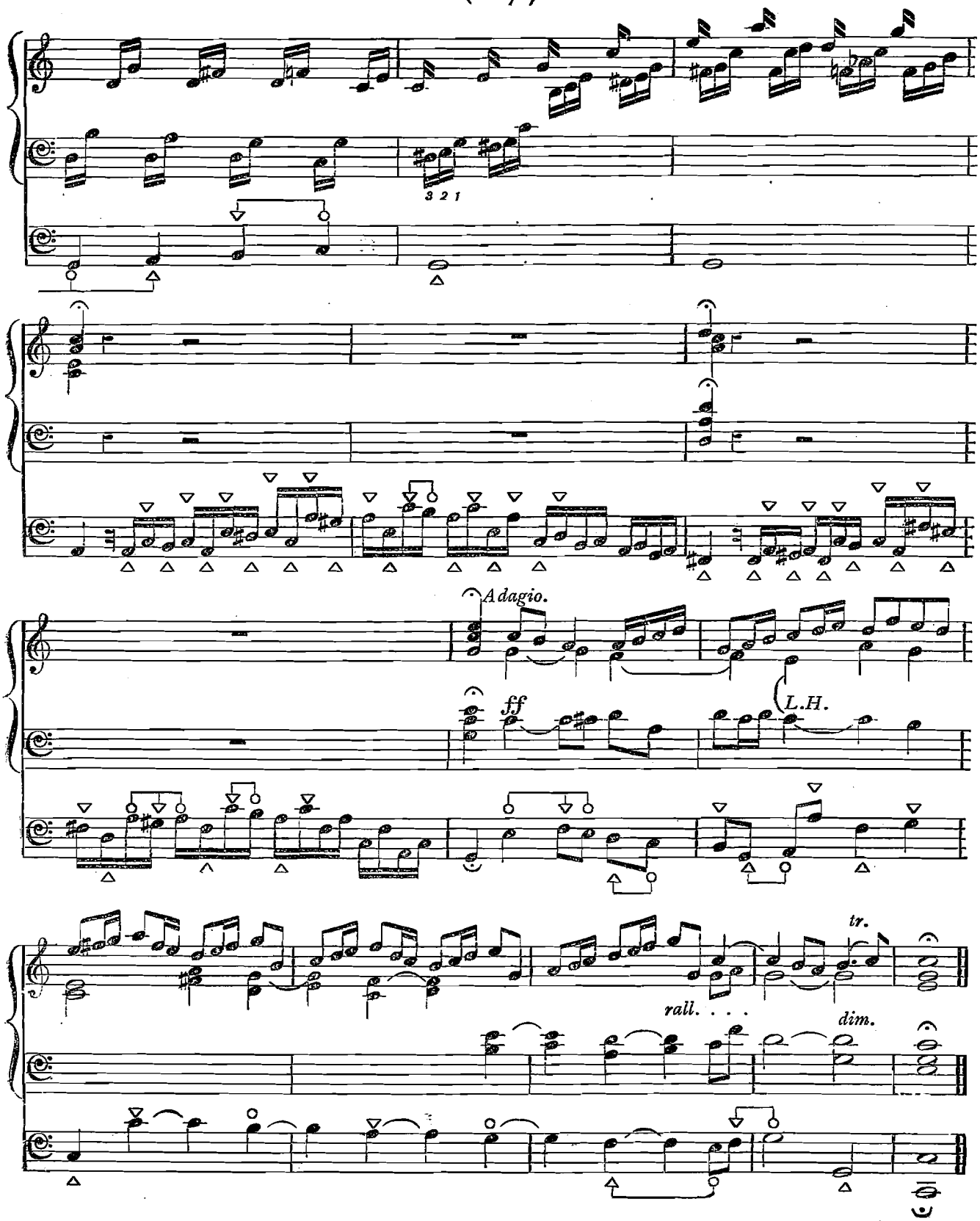

tr
1st time.
2nd time.
L.H.
L.H.


L.H.
rall.
ff
ff
Moderato.
R.H.
or
R.H.


L.H.


cres.
cres.
ff
L.H. rall.
fff
a tempo.


rall.
Presto.
R.H.
f
L.H. simile.


3 2 1
Adagio.
ff
L.H.
tr.
rall. . . .
dim.