

orchestra, and for nothing else) that they are to be censured by musicians.

If Tchaikovsky wrote a melody for violins, there is no sense in playing it upon a cornet; if Beethoven scored a passage for 'cellos, it should not be played upon a pair of euphoniums.

The modern orchestra has always welcomed brass instruments because of the great contrast which they afford to both the strings and the woodwind. For the same reason it has welcomed the use of the various kind of drums which have been introduced from time to time.

I will conclude with some remarks upon the drums as they are used in the modern orchestra. The value of the drum as a rhythmic instrument has never been questioned. The largest drum, the bass, is a wholly rhythmic instrument.

#### Indefinite Drum "Note."

It does not disturb the pitch of the music in which it takes part, as its "note" is very indefinite. It can, however, be of the greatest use in declaratory passages, where it helps to mark and stress the rhythm in no small degree. Much the same may be said of the military side-drum, which is frequently found in modern orchestras. It is capable of producing a great noise, which can, however, be effectively muffled by an alteration in what are called the "snares."

By far the most important of all the orchestral drums are those called the timpani or kettle-drums, because they are the only drums capable of producing a definite musical note. They are very distinctive in appearance and most people are able to recognise them at once. They consist of a skin stretched tightly across a basin-shaped shell made of copper or alloy.

The skin is held in position by being strained upon a wooden hoop and gripped by a circular iron hoop, which can be tightened or slackened by means of about eight screws.

There are always two and sometimes three kettle-drums, all of different sizes, and so of different pitches. The larger drum will produce the low bass F natural and can be "screwed up" to tenor C, a distance of a fifth. The other drum begins about B flat and goes up to the F. When a composer writes an orchestral work in which he requires to use kettle-drums he gives directions for the player to tune the drums to whatever pair of notes he requires. These two notes must thus be notes very frequently used in the piece itself.

If the work is in the key of C it will be useless to have the drums tuned to C sharp and F sharp, for example, because neither note is in the key-chord of C. As a matter of fact, the general, though not the invariable,

plan is to tune to the key-note itself and the fifth above it. So that, in the case of a work in the key of C, one drum would be on C and the other on G.

There are very few chords (unless the work changes key very violently) which will not contain one or other of those notes. If the music does happen to change key for a few bars one naturally sees to it that the drums are not used—at least for a sustained roll. If the music changes key for a reasonable length of time, most composers give the drums a rest for a few bars and direct that the tuning shall be changed.

Those who frequent orchestral concerts will have seen the drummer busily altering the tension of his screws and listening to the drum as he taps it in order to be certain that he has tuned it correctly.

He will then wait patiently until his part tells him that he must play in the new key. That is one of the strange things about orchestral players; they seem to have an odd sense which tells them when so many bars have passed.

Those who are not orchestral players may well wonder how they manage to come in at the right time. They have no full score before them, as the conductor has; so that they have no chance of looking along the drum-line and seeing where they will have to come in.

All they have is a single part as full of silent bars as bars to be played, very often; and yet they will play what is required of them and, finding that they have eighty or ninety bars of silence, will take up the evening paper—at any rate, during rehearsals—putting it down again in time to take up their drum-sticks and prepare for what is probably a very effective entry!

The whole procedure is very strange, whichever way you look at it. When a composer writes an orchestral work it matters very much to him which instruments play certain notes; he will spend hours in making careful decisions as to his orchestration in many instances.

When his score is complete he will pore over it and listen mentally to the effects he has produced; he will mark the expression with every possible care; he will, in short, indicate everything he imagines will be of subsequent use to any conductor who produces his work. Once he has finished his score his responsibility often ends. At least, it does in these modern days, when copyists undertake the work of making out the band parts from his work. The score has been the product of one intellect and seems to have some cohesion about it.

When the parts are handed round to the members of the orchestra each

player attends to his own part as though it were the only one. A drummer, for example, who has to be responsible for a single, though important, note 150 bars after the work has begun, will wait for that 150th bar quite unconcernedly.

About the 147th bar he will begin to watch the conductor carefully; at the 150th bar that note will sound exactly as the composer heard it in his own brain when the work was written.

The conductor is the interpreter, of course; upon his knowledge of the score and how to get the required effects everything depends. We who listen nightly to orchestral pieces floating out on the ether little realise very often the amount of brain-power that is being expended by so many people to bring about the required result.

The conductor's brain is the real influence, naturally; in his movements of arm and baton he has to suggest certain ideas to his men. It is amazing how quickly experienced players will understand a strange conductor's movements. The slightest movement will be interpreted as meaning something vital to the rendering of the music.

## Weather Disturbances

### Radio Held Blameless

RADIO broadcasting has been cleared of the often-heard charge of causing disturbances in the weather by Joseph Sanson, French meteorologist and engineer. In an exhaustive study of records covering French weather during the last two hundred years Sanson found that the same atmospheric irregularities that prevail today puzzled the citizens of France long before the Revolution.

As a matter of fact, meteorologists for some years have branded as a popular fallacy the belief that radio affects the weather. The notion became so widespread, however, that scientists deemed it necessary to make an investigation. The fact is that, compared with the enormous quantities of similar electrical energy released constantly into the atmosphere by thunderstorms, the ether vibrations from all the broadcasting stations in the world combined form less than the proverbial drop in the bucket.

But the weather, as all radio enthusiasts know, does affect broadcasting. Static, for example, is the voice of certain types of weather. It may be caused by lightning, snow, or rainstorms, and has been traced to advancing heat and cold waves. Sun spots and other solar irregularities also interfere with radio transmission.

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