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MUSICAL PITCH

ALTHOUGH the outside world knows little about it, the question of musical pitch causes great anxiety to the public singer, to the conductor of operas and choirs, and to musical instrument makers generally. Musical instruments are divided into two classes : those with fixed and those with variable tones. The first comprises organs and pianos and most brass and wood wind-instruments. The trombone, the bowed instruments, and the human voice are variable. Even the latter, however, can vary only within narrow limits, so that they cannot extend their compass at will. In the voice especially, although a few exceptional singers can, so to speak, acrobatise in music to the wonder of the public, yet the really good and usable part of even their compass for every-day work is comparatively limited, and if they are called upon frequently to sing either at their highest or lowest, the voice rapidly deteriorates, and wonder is changed to compassion. Violins even cannot afford to be "screwed up or down" too much, and rather prefer altering the thickness of their strings, with by no means a general improvement of effect. The thin strings are particularly objectionable in instruments only too prone to be played cuttingly. And clarinets and oboes, and even trumpets, when they are made short and narrow for high pitch, are only fit to be heard out of doors, as in military bands.

The whole secret of the difficulty lies in this : musical notes do not represent fixed and determinate sounds. The sounds collectively, when once the system of the scale is determined, are indeed fixed relatively to one sound, but that one has varied and does vary immensely. It has become quite an antiquarian problem to determine what sounds the writer of a piece of music attributed to his notes. This problem has to a great extent been solved by Mr. Alexander J. Ellis in a paper recently read before the Society of Arts and abstracted below, and we wish here to draw attention to the practical result of his labours.

Very little turns upon the music of more than three hundred years ago. It must be transposed, as is common with Orlando Gibbons's church music, and written in notes which at the current value will indicate sounds lying within the power of the singer. There is comparatively little of such music, and hence it is not difficult to reproduce it in the required form. It is only convenient to note in passing how very widely the meaning of the notes then differed from ours, Gibbons using a pitch which Mr. Ellis estimates as a whole Fourth above Handel's. But this does not apply to the great mass of classical music which has appeared since the beginning of the eighteenth century. When equal temperament (a babe of less than forty years old in England, as Mr. Ellis's facts establish) has a notation of its own, as has recently been proposed in Germany, and ceases to wear the clothes which Salinas designed in 1577, then it will become necessary to transcribe these works. In the meantime we must use what we have to the best advantage, and as much as it is possible in the sense which the com-

posers intended. And what was that? The principal historical fact which Mr. Ellis seems to have established is that all over Europe, for two centuries, down to 1816 at earliest in Vienna, later in the rest of Germany and in France, and down to 1828 in England (taking the Philharmonic Concerts as the standard), the sound assigned to the tuning A did not vary above one-sixth of a tone above or below the value of Handel's own fork, now in the possession of the Rev. G. T. Driffeld, Rector of Bow, and that hence this well-known fork represents the mean pitch of Europe for all classical music. What is that pitch? It is five-eighths of a tone below the pitch of the great concert organs at the Crystal Palace, the Albert Hall, and Alexandra Palace. When during a hot June or July day at the Crystal Palace on a Handel Commemoration the temperature, and hence the pitch of the organ, is driven up, Handel's music has to be sung three-quarters of a tone at least, sometimes a whole tone, higher than he imagined when he wrote it. The strain thus laid on the sopranos and tenors, especially in the choruses, is out of all reason, and the music, deprived of its proper fullness and richness, loses greatly in effect. Of course such a practice can only be excused on the ground of ignorance, and that is a plea which can no longer be raised after the proofs which have been adduced.

But what is to be done? Much music, considerably less in quantity, and perhaps in quality, if we except Mendelssohn's, has been written to a much higher pitch. Thus the celebrated Gewandhaus Concerts at Leipzig, representing Mendelssohn's pitch, were a whole semitone sharper than Handel's fork, as is shown by Mr. Ellis. Are we to destroy the new music for the sake of the old, as we now destroy the old for the sake of the new? Or are we to have two sets of instruments—two organs at the Crystal Palace and Albert Hall, or at least two sets of stops in the same case? Of course such ideas are wild, though not so wild as they look, for Dresden has two sets of instruments, and old churches (as the cathedral at Lübeck and the Franciscan Convent at Vienna) have two organs in different pitches, nay one German organ certainly had stops in two pitches differing by a minor Third. We have however no need to have recourse to such devices. The French Commission on pitch in 1858 has given a satisfactory answer to the question. It has settled a value for A nearly half-way between the old and the new, but, as is just, rather nearer to the old, and has fixed this pitch by a beautiful standard fork properly preserved in the Musée du Conservatoire at Paris, the only real standard of pitch in the world. This Diapason Normal is exactly two-eighths of a tone above Handel's fork, and about three-eighths of a tone below the Crystal Palace organ at mean temperatures, that is below our highest concert pitch. An important resolution was passed at Dresden in 1862 by eminent conductors (quoted by Mr. Ellis), saying that such "a lowering of pitch to the new Paris standard appears equally desirable and satisfactory for singers and for orchestra; that quality of tone would gain, the brilliancy of the band would not be lost, and the power of the singers would not be so severely taxed or strained."

The rise in pitch since 1816 has been the result of a series of accidents. Nothing approaching to scientific or musical thought appears in it. The most that can now be

done is to recognise its existence by adopting the French compromise. And, by the way, this is by no means French except in name, for in 1828 Sir George Smart, then conductor of the Philharmonic, adopted what was practically the same pitch in England, and the greater number of so-called Philharmonic forks sold down to thirty years ago gave the C of the later French pitch. It has left its impress, too, on numerous organs which during this period were tuned to "Smart's pitch," as it was then called. It is in fact a long tried English pitch, displaced only by accidental circumstances during Costa's conductorship of the Philharmonic. In France its use is universal, in Germany it was generally accepted, though a fresh rise is there perceptible, in Madrid it has lately been adopted, and even in Belgium, the only country in Europe which approaches the English heights of pitch, a recent commission reported in its favour for both concerts and military bands. Finally, the enormous inconvenience felt by singers accustomed to this pitch, when coming over for a London season or special concerts (as at the recent Wagner festival, according to Wagner's own statement), have induced the Covent Garden Opera to revert to it again this season, so that musicians will have an excellent opportunity of judging of its effect.

A strong argument usually brought against a change of pitch is the difficulty of getting new brass and wood instruments. The French pitch has now lasted long enough for good instruments to be made in it, and it is in fact more easy, out of London, to obtain instruments in that pitch than in any other. But considering that it was used in England and in France for about twenty years prior to 1850, and that the bands accommodated themselves to the gradual change then, there seems no reason why they should not do so now. Organs present a difficulty, but no mercy should be shown to them. Organs sharpen so much by temperature in a concert room crowded or lighted up, or in summer, that it is really inhuman to build organs that even at mean temperatures strain the voice of a singer of Handel to follow. They are essentially solo instruments. French pitch is the highest admissible pitch for organs which have to lead voices, and these which are sharper should be flattened forthwith. Church organs are even now usually constructed but a trifle sharper than French pitch. As for pianos, it is well known that the concert grand pianos improve in richness and quality of tone by being brought down to French pitch. It is a mere matter of stringing and tuning, not of construction.

Besides the importance of having a uniform pitch to the singer and the manufacturers of instruments, there is a theoretical advantage to the listener. With equal temperament when properly carried out, the relations of the intervals in different keys remain precisely the same, and the effect of change of key therefore is due to the change of pitch of the tonic and its related notes. When the ear is accustomed to one pitch it easily recognises the key. When the pitch varies from time to time and place to place, the sense of key becomes deadened and lost, and even the most experienced ears become confused. Hence, both theoretically and practically, uniformity of pitch is imperative. Practically an intermediate pitch between the old pitch of Handel, Haydn, Mozart, and Beethoven, and the new pitch of Mendelssohn, Costa, and Verdi, is

the only one feasible to allow of both kinds of music being played by one organ or one band. And such a pitch is the French, the pitch of all French and most German modern music, the pitch in which the works of Wagner can alone be properly heard.

FARMING

Farming for Pleasure and Profit. Fourth, Fifth, and Sixth Sections. By Arthur Roland. (London: Chapman and Hall, Limited.)

THE publication of a work bearing such a title, naturally commands special attention at a time when farming is looked upon as anything but a pleasant and profitable business. Although it is evidently written by one practically acquainted with agricultural operations, a perusal unfortunately shows that it is very imperfectly adapted for meeting the needs of farmers in times of difficulty like the present. It has a great defect in its oversight of many of the improvements which have been introduced during the last twenty or thirty years, so much so, indeed, as to lead to a doubt whether there has not been a clerical error in the date of publication, and 1880 substituted for 1850.

The Fourth Section of this work is devoted to "Stock Keeping and Cattle Rearing." The economical production of pork is evidently one of the details of practice on which the author prides himself. He says, "Nettles grow in great profusion in our hedges, the somewhat sandy soil which chiefly prevails apparently being favourable to their growth. These I have all cut down with a bill-hook by one of the men, and they are brought to the pigstyes—unless we boil some up with other green stuff, which we do when they are young—and the pigs eat the nettles as freely as they will cabbages. My economical contrivances in this way, as may be expected, provoked the scorn of the labourers at first, and does at all times upon the occasion of a new man being engaged; but the success of the plan has been proved to demonstration, over and over again, to my old hands, who have got into my ways and system, and it is upon the adoption of these economical contrivances that the profits of farming mainly depend."

If this were true clean hedgerows are a great mistake, and uncultivated weeds have been sadly undervalued, hence, possibly, even the present depression in agriculture. But the author has evidently not acted upon the advice which he subsequently gives, for he says: "The old labourers of a district are often better acquainted with the peculiarities of the soil and other matters, the result of long observation, than the farmer, himself; and although it is by no means necessary to act upon their advice, which would often mislead and cause ignorance and prejudice to reign instead of sound principles, yet there is often much that may be learned from them and turned to profitable account." Practical experience, whether obtained by the labourer or by the farmer, is undoubtedly of great value, and should be justly prized; but it is open to question whether the author has here shown that discretion which will not allow "ignorance or prejudice to reign instead of sound principles."

In dealing with our various breeds of cattle the author falls into some grievous errors; for example, he remarks