

**PROCEEDINGS
OF THE
MUSICAL
ASSOCIATION**

Musical Association (Great
Britain)



THIS BOOK IS FOR USE
WITHIN THE LIBRARY ONLY



HARVARD COLLEGE LIBRARY

MUSIC LIBRARY



PROCEEDINGS
OF THE
MUSICAL ASSOCIATION

FOR THE INVESTIGATION AND
DISCUSSION OF SUBJECTS CONNECTED WITH THE
ART AND SCIENCE OF MUSIC.

FOUNDED MAY 28, 1874.

SIXTH SESSION, 1879-80.

LONDON:
STANLEY LUCAS, WEBER, & CO., 25, NEW BOND STREET, W.
1880.

DE 7-93

A
Nov 30. 62. 2 (6 L)
✓



POSTAGE WILL BE PAID BY ADDRESSEE
NEWARK, N. J.
NOV 30 1962

CONTENTS.

RULES AND REGULATIONS	iii
GENERAL AND MEMBERS OF THE ASSOCIATION	iv
REPORT OF THE SOCIETY	vi
PERSONAL ARRANGEMENTS FOR 1876	vii
"ON THE MECHANISM OF THE HUMAN VOICE." By ERIC BRUNN, Esq. (This paper was illustrated by a large working model of the larynx)	1
2. "ON A MODE OF PROTECTING CONTINUOUS SPINDS FROM FREQUENT STOPPAGE." 3. "ON SOME EXPERIMENTS WITH A REVOLVING SPIN- NING COOL." By R. H. M. BRADGATE, Esq., M.A.	15
"ON BEAUFY OF TOOLS AND TOWNS." By A. DELANEY STILES, Esq.	35
"ON METAL MACHINES, WITH SPECIAL REFERENCE TO DR. COE, HARRIS'S MERRY, 'YON UNIVERSAL SYSTEM.'" By EDWARD J. BRADSTRAW, Esq.	53
"ON QUALITY OF TOOL IN WOOD MACHINERY." By B. J. STANLEY, Esq.	73
"FUNDAMENTALS OF FERRULE CHAINS." By D. A. CHURCH, Esq.	85
"ON WOOD AS A PROFESSION IN ENGLAND." By G. E. SALAMAN, Esq., Hon. Mem. Acad. Sci. Central, Bonn	102
"ON THE LITCHI-BARK." By G. A. MORTIMER, Esq., Hon. Doc. Cantab., FROM MR. CARTER, R.	125

*The Authors of the respective Papers are alone responsible
for the opinions expressed in them, as well as for the correctness
of the Illustrations.*

RULES AND REGULATIONS

Passed at Three Special General Meetings of the Members, held at 27, Mark Lane, W., on February 7 and April 3, 1876, and on January 6, 1879.

OBJECTS AND CONSTITUTION.

This Association is called the "Musical Association," and is formed for the investigation and discussion of subjects connected with the Art, Science, and History of Music; and is intended to be similar in its organization to existing Learned Societies.

It is not intended that the Association shall give concerts, or undertake any publications other than those of their own Proceedings, or the Papers read at their Meetings.

MEMBERS

The Association shall consist of practical and theoretical musicians, as well as those whose researches have been directed to the science of acoustics, the history of the art, or other kindred subjects.

Any person desirous of being admitted into the Association must be proposed by two members.

Elections will take place by ballot of the members present at any of the ordinary meetings, and one adverse vote in four shall exclude.

No newly elected member shall be entitled to attend the meetings until the annual subscription be paid.

SUBSCRIPTION.

The annual subscription to the Association is one guinea, which shall become due on the 1st of November in each year.

Any member may, upon or at any time after election, become a life member of the Association by payment of a composition of £250. in lieu of future annual subscriptions, but in addition to any annual subscription previously paid or due

from such member. Such name shall from time to time be invested in legal security in the names of Trustees, to be appointed by the Council.

Should members desire to withdraw from the Association, they should give notice to the Hon. Sec. on or before the 31st of October.

MEETINGS.

An ordinary meeting shall be held on the first Monday in every month, from November to June inclusive, at 5 P.M., when, after the despatch of ordinary business, Papers will be read and discussed.

An annual general meeting of members only shall be held at 4 P.M. on the last Monday in October, to receive and deliberate on the Report of the Council, and to elect the Council and officers for the ensuing year.

Special general meetings may be summoned whenever the Council may consider it necessary, and they shall be at all times bound to do so on receiving a requisition in writing from five members, specifying the nature of the business to be transacted. At least one week's notice of such special meeting shall be given by circular to every member, and ten members present at any general meeting shall constitute a quorum.

Every member shall have the privilege of introducing one visitor at the ordinary meetings, on writing the name in a book provided for that purpose, or sending a written order.

COMMUNICATIONS.

Papers proposed to be read at the meetings may treat of any subject connected with the Art, Science, or History of Music, Acoustics, and other kindred subjects.

Papers will be received from or through any member of the Association.

Experiments and performances may be introduced, when limited to the illustration of the Paper read.

All communications read will become therewith the property of the Association (unless there shall have been some previous arrangements to the contrary), and the Council may publish the same in any way and at any time they may think proper.

REPORTS.

A Report of the Proceedings of the Association, including the Papers read or abstracts of the same, and abstracts of the Discussions, shall be printed and distributed to the members as soon as possible after the end of each session.

This Report will be arranged and edited by the Honorary Secretary, under the direction of the Council.

COUNCIL AND OFFICERS.

The management of the affairs of the Association shall be vested in a Council, to be elected by ballot at the general meeting of the members on the last Monday in October.

The Council shall consist of a President, Vice-Presidents, and ten ordinary members of the Association.

The Honorary Secretary of the Association shall be *ex officio* an ordinary member of Council.

The President, Vice-Presidents, Auditors, and five ordinary members of the Council shall retire every year, but shall be eligible for re-election.

At the annual general meeting in October, the Council shall present a balloting list, showing the names of the persons whom they propose for the offices of President, Vice-Presidents, and ordinary members of Council for the ensuing year. A copy of this list shall be given to each member present.

In voting, each member may cross any name or names from the balloting list, and may substitute the name or names of any other person or persons whom he considers eligible for each respective office; but the number of names on the list, after such crosses or substitution, must not exceed the number to be elected to the respective offices as above enumerated. Those lists which do not accord with these directions shall be rejected.

The Chairman of the meeting shall cause the balloting papers to be collected, and after they have been examined by himself and two scrutineers, to be appointed by the members, he shall report to the meeting the result of such examination, and shall then destroy the balloting papers. Auditors shall be appointed at the annual general meeting by the members, and the statement of accounts shall be sent by the Treasurer to the Auditors, and be remitted by them to the Secretary in time to enable the Council to judge of the prospects of the Association, and to prepare their report in accordance therewith.

The Council and officers shall meet as often as the business of the Association may require, and at every meeting three members of Council shall constitute a quorum.

ENACTMENT OR ALTERATION OF RULES AND REGULATIONS.

No rules and regulations can be enacted, altered, or amended, except at a special meeting of members summoned for the express purpose, the summons stating distinctly and fully the matter to be brought under consideration.

MUSICAL ASSOCIATION

FOR THE INVESTIGATION AND DISCUSSION OF SUBJECTS
CONNECTED WITH THE ART AND SCIENCE OF MUSIC.

FOUNDED MAY 29, 1874.

Council.

PRESIDENT.

DUNSTON, The Rev. Dr FREDERICK A. GARR, Bart., M.A., Mus. Doc. Oxon.,
Prof. Mus. Univ. Camb.

VICE-PRESIDENTS.

COWFELL, WILLIAM, Esq., F.S.A.

DOLANSMITH, OWEN, Esq.

GEORGE, GEORGE, Esq., D.D.

HULLAN, JOHN, Esq., LL.D., Hon. Mem. Acad. St. Cecilia, Rome.

MATTHEWS, GEORGE ALEXANDER, Esq., Mus. Doc. Oxon., Prof. Mus.
Camb., Principal of the Royal Academy of Music.

OSBORNE, GEORGE ALEXANDER, Esq.

PEAR, WILLIAM, Esq., F.R.S., L., and S., Mus. Doc. Oxon.

SULLIVAN, CHARLES KENNEDY, Esq., Hon. Mem. Acad. St. Cecilia, Rome.

SPOTTISWOODE, WILLIAM, Esq., M.A., F.R.S., LL.D., &c., &c.

STAINER, JOHN, Esq., M.A., Mus. Doc. Oxon., Hon. R.A.M.

STARR, WILLIAM HENRY, Esq., M.A., F.R.C.P.

TYNDALE, JOHN, Esq., F.R.S., LL.D., &c., &c.

ORDINARY MEMBERS OF COUNCIL.

BARR, G. A., Esq., M.A.

DOLANSMITH, E. M. M., Esq., M.A., F.R.S., F.C.S.

GEORGE, J. FREDERICK, Esq., Mus. Doc. Oxon., Permanent Deputy, Organist
Westminster Abbey.

GREENWOOD, HENRY G. A., M.A.

GREENWOOD, W. M., Esq.

HUGHES, JAMES, Esq., Mus. Doc. Oxon. (The Sec.)

HULLMAN, REV. THOMAS, M.A.

MOORE, W. H., Esq., Prof. King's Coll.

PERCIVAL, A. H. D., Esq., M.A.

PROUT, E., Esq., B.A.

STARR, CHARLES HENRY, Esq., Hon. R.A.M.

TREASURER.

STANLEY LALAN, Esq., 24, New Bond Street, W.

AUDITORS.

WILLIAM S. COLLIER, Esq.

CHARLES MATTHEWS, Esq., F.R.S.

HONORARY SECRETARY.

JAMES HUGHES, Esq., Mus. Doc. Oxon., 9, Torrington Square, W.C.

MEMBERS.

Adams, William Cyril, Esq., M.A.,
F.R.S., Professor King's College.

Beaman, Henry Charles, Esq., Prof.
R.A.M.

Barnett, John Finson, Esq.

Barnes, W. A., Esq., Mus. Doc. Oxon.

Berry, G. A., Esq., M.A.

Bowers, M., Esq., F.C.S.

Ball, J. M., Esq.

Bellamy, The Rev. J., D.D., President
St. John's Coll., Queb.
Bennett, Sir John, Knt.
Berger, Francois, Esq.
Blackley, Donald James, Esq. (2-5
Member).
Blanton, G. S., Esq.
Bonaparte, R. H. M., Esq., M.A.,
F.R.S., F.R.S., Fellow of St.
John's Coll. Queb.
Boulton, Captain, S.N.
Boulton, H. M., Esq.
Bousquet, E. J., Esq.]
Bridges, J. Brock, Esq., Med. Dec.
Dean, Permanent Deputy Organist
Westminster Abbey
Bridges, Joseph C., Esq., M.A., Mus.
Esq. Queb., Organist Church
Cathedral.
Broadbent, John, Esq.
Broome, Leonard, Esq., F.R.C.S., Edin.
Brooklyn, Mrs. E. F.
Buller, G. W., Esq.
Buxary, Haroon, Esq.

Chappell, William, Esq., F.R.S. (Vice-
President).
Chappell, Arthur S., Esq.
Clarke, Somers, Esq., Jun.
Clay, Frederick, Esq.
Cobb, General F., Esq., M.A., Trin-
Coll. Camb.
Coble, C., Esq.
Colledge, Arthur Duke, Esq., M.A.
Collard, John C., Esq.
Collard, W. S., Esq.
Conroy, The Rev. Sr G., Esq.
Cromart, J. M., Esq., Mus. Esq. Queb.
Crowder, Major George A., M.A.
Crow, E. J., Esq., Mus. Esq. Cathed.,
Organist Royal Cathedral.
Cummings, W. H., Esq.
Curran, J. S., Esq.

Deaton, H. C., Esq.
Dean, The Rev. H., D.D., St. John's
Coll. Queb.
Dick, Charles Crawford, Esq.
Douglas, Capt. F. A. (Wald).
Dunn, Mus. Cathedral.
Dunn, Mrs., of Ingleswood.

Ellis, Alex. J., Esq., B.A., F.R.S.,
F.R.A.
Ellis, William, Esq., F.R.S.
Eves, Sir George, Bart., Mus. Dec.
Queb. (Warden).

Farrer, John, Esq.
Farrall, E., Esq.

Fowler, W. W., Esq., M.A., Laurin
Coll. Queb.
Frasier, Mrs.
Frost, M. P., Esq., Organist Stuy
Chapel Royal.

Gardner, Henry, Esq.
Gault, Mansel, Esq.
Gib, William Henry, Esq.
Gibbons, W. H., Esq., M.P.
Gibbons, F. E., Esq., Mus. Dec.,
Hon. R.A.M., Organist North-
Cathedral.
Gibson, Geo., Esq. (Vice-Presi-
dent).
Gibson, Ben. A., M.A.
Gibson, George, Esq., D.D., (Vice-
President).

Giffin-Henderson, J., Esq.
Giblin, E., Esq.
Gibson, The Rev. T., M.A.
Gibson, James, Esq., Mus. Esq. Queb.
(Vice Sec).

Giles, Henry, Esq., Mus. Dec. Queb.
(President).
Gill, Arthur, Esq., B.E. (Card).
Gibson, Henry, Esq.
Gibson, Richard, Esq.
Gibson, John, Esq., LL.D., Hon.
Mem Acad. St. Cecilia, Rome (Vice-
President).
Gibson, Capt. C. H., Organist of St.
Peter's, Very Rev. Bishop
Hutchinson, F. M., Esq. (Warden).
Hutton, Captain Alfred.

Kent, Oswald, Esq.

Leighon, Miss Margaret.
Lalton, Alfred H., Esq.
Lloyd, Charles H., Esq., M.A., Mus.
Esq. Queb., Organist Gloucester
Cathedral.

Lindsay, J., Esq.
Long, Hathcock, Esq.
Lusk, Ben. A. S., M.A.
Lucas, Stanley, Esq. (Treasurer).

Machover, George Alexander, Esq.,
Hon. Dec. Canada, Post. Com.
Queb., Fournal of the Royal
Academy of Music (Vice President).

Macdonald, Charles, Esq., F.R.S.
McGough, Major.
McKnight, W. G., Esq.
Maffick, H. E. A., Esq., Harbled
Coll. Queb.
Mann, August, Esq.
Mar. Dec. of, M.A.
Marble, G. C., Esq., Mus. Esq. Queb.

Moak, Edwin George, Esq., Mus. Doc.
Oxon., F.R.S., Organizer York
Meeting

Moak, W. H., Esq., Prof. King's Coll
Newns, D. Henning, Esq., M.A., Oxon
Coll. Oxon.

Montgomery, Hugh, Esq., M.A.

Newell, F. S., Esq.

Northway, W. J., Esq.

Osbourn, George Alcock, Esq. (Pres-
-ident)

Ostley, Edward J., Esq.

Owley, The Rev. St. Faith & Gars-
-ton, M.A., Mus. Doc. Oxon., Prof.
Vice Oxon., (President)

Parrott, Walter, Esq., Mus. Res. Oxon.
Prest, Thomas, Esq.

Pole, Wm., Esq., F.R.S., Mus. Doc.
Oxon. (Vice President)

Pontigny, Victor De, Esq.

Popo, Dr. Campbell, M.D.

Prendergast, A. H. D., Esq., M.A.

Prentiss, Miss Maria.

Price, E., Esq., D.A.

Ramboldham, Dr. B. H.

Randolph, Albion, Esq.

Randolph, Lord, M.A., F.R.S.

Rhodes, Alfred, Esq., Organist of
Swiss Independent Church
Essex, Carl, Esq.

Roberts, Charles K., Esq., Hon.
Surg. Acad. St. Cecilia, Oxon.
(Vice President)

Rogers, Mr. Serjeant-

Ridgway, Leo, F., Esq.

Rogerson, W. de M., Esq.

Roth, H. Andrews, Esq.

Routh, Herman, Esq.

Routhgate, Thomas Len, Esq.

Spethworth, William, Esq., M.A.,
LL.D., F.R.S. (Vice President)
(Exp. Member).

Stamer, John, Esq., M.A., Mus. Doc.
Oxon., Org. St. Paul's Cathedral,
Hon. F.A.M. (Vice President)

Stanford, C. Vernon, Esq., M.A.,
Organist Trinity College, Camb.
Statham, The Rev. Wm., B.A., Mus.
Doc. Durham

Stuart, A. Orlando, Esq.

Stephens, Chas. Edward, Esq., Hon.
F.A.M.

Steele, Dr. W. H., M.A., F.R.C.P.
(Vice President)

Stewart, Stephen S., Esq.

Stirling, Arthur S., Esq., Mus. Doc.
Oxon.

Sturges, J. Lat., Esq.

Taylor, Keston, Esq., M.A., Trin. Coll.
Camb.

Taylor, James, Esq., Mus. Res. Oxon.,
Organist New College, Oxon.

Tennant, Chas. R., Esq.

Thomas, J., Esq.

Thomas, The Rev. C., M.A., Trin.
Coll. Camb.

Thurton, Mrs. Margaret

Tunstall, John, Esq.

Tyndall, Frederick John, F.R.S.,
LL.D. (Vice-President)

Verdine, Madie Gabrielle.

Walker, The Rev. H. Aston, M.A.,
Oxon. Coll. Oxon.

Ward, Miss

Ward, H., Esq.

Webster, W., Esq.

Webb, W., Esq., M.A.

Wheat, Mrs. F. Maudslow.

Williams, Richard, Esq., M.D.

Wilson, Sight Hon. Esq. of

Wingham, T., Esq.

Zimmerman, Miss Agnes

FIFTH SESSION, 1878-79.

THE ANNUAL GENERAL MEETING of the Medical Association was held at No. 27, Harley Street, Cavendish Square, on Monday, October 27, 1879.

IN THE CHAIR—G. A. OSBOURNE, Esq., Vice-President.

THE FOLLOWING

REPORT OF THE COUNCIL

Was read by the Honorary Secretary.

In accordance with the rules of the Medical Association, the Council presents to the Members its Annual Report of the Fifth and now past Session. During its course the usual series of eight monthly meetings has been held, papers have been read, and communications made on various subjects connected with "the Art, Science, and History of Music."

The arrangements for the past Session were as follow:—

First Meeting.—Monday, November 4, 1878. Paper by Shalford Bishell, Esq., M.A., LL.B., Esq., "On Recent Inventions for Reproducing the Sound of the Human Voice." (Illustrated by Trépassez, Microphone, and Phonograph.)

Second Meeting.—Monday, December 2. Papers by Lord Rayleigh, M.A., F.R.S., (1) "On the Determination of Absolute Pitch by the Common Harmonicon;" (2) "On the Mutual Influence of Sources of Sound nearly in Contact."

Third Meeting.—Monday, January 6, 1879. Paper by E. Frost, Esq., B.A., "On the Growth of the Modern Orchestra."

Fourth Meeting.—Monday, February 3. Paper by G. A. Osborne, Esq., "Berkeley."

Fifth Meeting.—Monday, March 3. Paper by the Rev. Sir F. A. Gasquet, Bart., "On the Early Italian and Spanish Treatises on Counterpart and Harmony."

Sixth Meeting.—Monday, April 7. Paper by C. G. Saunders, Esq., "On Sound in Relation to Buildings."

Seventh Meeting.—Monday, May 2. Paper by W. Spottiswoode, Esq., M.A., F.R.S., LL.D., &c., "On Steam and Combination Tones."

Eighth Meeting.—Monday, June 2. Paper by C. E. Stephens, Esq., Hon. S.A.M., "On Form in Musical Composition."

The attendance at these Monthly Meetings has been generally good, and much interest has been displayed in each of the several topics introduced and discussed.

The Council, in connection with the subject of the attendance at the meetings, desires to remind Members—Country Members especially—of their privilege of introducing a friend at each meeting, either by written order or personally.

The fifth volume of the Proceedings of the Musical Association (which has been forwarded to every Member) contains a most valuable addition to current musical literature and knowledge, and is in itself an ample justification of the hopes and intentions of the founders of a Society which affords an important and acknowledged medium for all whose discoveries or researches have any bearing on the Art, Science, or History of Music. The Council urges upon the Members generally to make the existence and scope of the Musical Association more widely known, and desires to remind them of the rule that communications will be received from or through Members, subject to the approval of the Council.

On January 6, 1879, in accordance with a duly signed requisition, a Special General Meeting was held, and the following additions to the Rules were made:—

- (a) Any Member may, upon or at any time after election, become a Life Member of the Association, by payment of a composition of Ten Guineas, in lieu of future Annual Subscriptions, but in addition to any Annual Subscription previously paid or due from such Member. Such sum shall from time to time be invested in legal security, in the names of Trustees, to be appointed by the Council.
- (b) The Honorary Secretary shall be ex officio an ordinary member of Council.

The Balance Sheet, duly audited, lies on the table for inspection.

The Council congratulates the Members on the fact of the year's expenses having been so kept within the year's income, by the practice of rigid economy, that the balance with which the year began has been considerably increased. A sum of Twenty Guineas, received for two Life Subscriptions, has been carried to a separate account.

The attention of Members is again called to the inconvenience that results from irregularity in the payment of Subscriptions. At the beginning of each Session the Council has to undertake certain necessary liabilities, in good faith that the Annual Subscriptions will be promptly paid; when, however, Members forget (as some are apt to do) this necessary duty, the commission of the Collector becomes an appreciable charge on the income of the Association, and a most objectionable though perhaps unavoidable expenditure of its funds.

The Council, whilst making this Report of the past Session, and surrendering its trust into the hands of the Members, feels happy in the prospect of the coming one, which gives promise of much interest.

SESSIONAL ARRANGEMENTS.

SIXTH SESSION, 1879-1880.



First Meeting.—Monday, November 3, 1879.

Paper by EMIL BERTNER, Esq., "On the Mechanism of the Human Voice." (Illustrated by a large working model of the Larynx.)

Second Meeting.—Monday, December 1.

Papers by R. H. M. DEANQUET, Esq., M.A. (1) "On a mode of producing Continuous Notes from Harmonium." (2) "On some Experiments with a Revolving Stop-Cock."

Third Meeting.—Monday, January 5, 1880.

Paper by A. OLLANCO STANA, Esq., "On Beauty of Touch and Tone."

Fourth Meeting.—Monday, February 2.

Paper by EUSTACE J. DEANQUET, Esq., "On Musical Aesthetics; with especial reference to Dr. Ed. Hanslick's essay, 'Von musikalisch-Schönen.'"

Fifth Meeting.—Monday, March 1.

Paper by D. J. BLASLEY, Esq., "On Quality of Tone in Wind Instruments."

Sixth Meeting.—Monday, April 5.

Paper by G. A. DEVEREAUX, Esq., "On Chopin."

Seventh Meeting.—Monday, May 3.

Paper by C. K. SALAMAN, Esq., Hon. Mem. Acad. St. Cecilia, Rome, "On Music as a Profession."

Eighth Meeting.—Monday, June 7.

Paper by G. A. MACMURRAY, Esq., Mus. Doc. Cantab., &c., "On the Lyrical Drama."

November 3, 1879

W. H. CUMMINGS, Esq.,

In the Chair.

THE MECHANISM OF THE HUMAN VOICE.

By EARL BROWN, Esq.

THE subject with which I have to deal this evening is a very complicated one, and the time at my disposal is very short, so that I can, at the best, give you but a brief outline of it. I will, therefore, not lose a minute upon any preliminary remarks, but proceed at once with my paper.

Mr. LARSEN BROWN, with whose name you are all familiar, has just translated and edited a French book explanatory of an admirable "Atlas of the Throat," &c., by Dr. Witkowski, from which I quote the following passage:—

Physiologists are quite at issue when they endeavor to determine what kind of instrument the vocal apparatus resembles: instead of a building, beam, barrel, or a Lindström's reed, it is an organ-pipe, Blagajevic is the little instrument used by the violins of Pusch, and Ferrus is a species of harpsichord. The late-named compared the lips of the glottis to the strings of a violin; hence was given the name vocal *arcs*, which they have since retained. The support of air was the bow, the expansion of the chest and lungs the hand which coated the bow, the thyroid cartilage the *joint d'appui*, the arytenoids the pegs, and lastly, the muscles inserted in them the power which sound or released the *arcs*.

So far Dr. Witkowski. Now I am quite willing to admit that the human voice bears more resemblance to a reed instrument than to any other. But when the comparison is pushed to its legitimate consequences, it is found to break down, and we cannot resist the conclusion that the vocal organ is infinitely superior to any instrument made by human hands. Its mechanism is so wonderful as to excite the profoundest admiration, and the more we continue to study of the same, we marvel at the wisdom of the Divine Maker who planned it. I shall, therefore, speak of it simply as a wind instrument, composed of

THE HOLLOW, represented by the lungs.

THE WINDPIPE.

THE VOICE-BOX, or LARYNX, and

THE *TRACHEA*, represented by the upper part of the chest, the mouth and the nose.

THE *LENGS* are enclosed in the chest. They consist of two bodies which resemble the shape of a sugar-loaf somewhat flattened and hollowed out at the bottom. They are connected only by means of the windpipe.

THE *CAVE* is an air-tight chamber formed by the spine behind, the ribs on either side, the breast-bone in front, the root of the neck at the top, and the midriff or diaphragm at the bottom.

THE *MIDRIF*, or *DIAPHRAGM*, is a movable muscular partition, separating the lungs from the abdomen. In a state of rest it is arched up, but is flattened by contraction, thus increasing the capacity of the chest at the expense of the abdomen.

THE *FUNNEL* or *THE LUNGS*, as everybody knows, is respiration, which may be considered from a mechanical or from a chemical point of view. Here we are only concerned with the mechanical aspect of the case. We shall get a tolerably clear idea of this subject by examining the lungs of a calf, which are very similar to those of a man. We see the conical shape described before, and have the two halves of which they consist are united by the branches of the windpipe. If we press upon them we find that they are soft and elastic to the touch, and that they emit a peculiar whizzing sound. By blowing into them through the windpipe we increase their bulk to double their former size, and we can keep them in this state of expansion by tying up the windpipe. On untying the windpipe we find that the air just blown into the lungs escapes again, and that they dwindle down to their original size. Now by drawing a deep breath we produce just the same result upon our own lungs as we did by blowing into the lungs of the calf. By holding the breath we imitate the tying up of the windpipe, and by releasing the breath we are, as it were, untying the windpipe.

RESPIRATION consequently consists of two acts—inspiration and expiration. Inspiration may be carried on in three different ways—First, by flattening the midriff, thus compelling the lungs to expand: this I call *midriff breathing*, the *diaphragmatic* or *abdominal breathing* of other authors; second, by extending the ribs sideways, which I call *rib breathing*, otherwise *costal* or *lateral*; and third, by drawing up the upper part of the chest, which I call *collar-bone* (clavicular) *breathing*. In drawing a deep, full inspiration, *midriff breathing* and *rib breathing* take place together, with this difference however in the two sexes, that in men the midriff takes a larger share in the work than the ribs, while in women the opposite is the case.

By way of illustrating this curious difference of breathing in men and women, the following anecdote, which has the recommendation of being strictly true, may perhaps amuse my

audience. Some time ago a troupe of "Female Minstrels" calling themselves, I believe, "The American Amazons," made a tour in this country. Their faces were blackened in the orthodox fashion, and they were in male attire, wearing tight-fitting garments of a peculiar kind. Two friends, both medical men, went to hear them (or perhaps to see them, I am not sure which), when Mr. A. remarked that two of the performers were men. Mr. B. did not see it, even when the individuals were pointed out to him, and asked his friend for the reasons for his opinion. "Why," said Mr. A., "I see it by their abdominal breathing!" And, sure enough, Mr. B. now saw it too, and there was no mistake about it; for in the two suspected individuals the abdomen was evidently moving in respiration, while in all the others no movement was perceptible excepting that of their chests.

The contracted form of midriff and ribs breathing are the right method of inspiration, while collar-bone breathing is totally wrong and should never be made use of. The reasons for this are twofold. In the first place the lower part of the lungs is, as we have seen, large and broad, while the upper part is cone-shaped and much smaller. It is clear, therefore, that by including the lungs at the bottom we shall get hold of a much larger volume of air than by including them at the top. But, secondly, all parts surrounding the base of the lungs are soft and yielding, so that the process of expansion and contraction is carried on without any fatigue, while the very opposite is the case with the parts enclosing the top of the lungs. These are hard and unyielding, so that they cannot be expanded and contracted without great labour, which soon produces exhaustion.

THE **WINDPIPE** is the channel through which the air is carried into and out of the lungs. It is an elastic tube kept open by eighteen or twenty rings. It enters the lungs by means of two smaller tubes, which in their turn branch out into a number of minor arms, very much like the roots of a tree, which eventually end in the microscopic air-cells of the lungs. The windpipe can be slightly prolonged or shortened and widened or narrowed; it is covered with a mucous membrane which, as the name implies, is continually kept in a moist state.

THE **VOICE-BOX**, or **LARYNX**, is a kind of funnel bent into a triangular shape. It is also known as the "Adam's Apple," and may be felt in the throat at the top of the windpipe. The framework of the voice-box consists of five parts—namely, the ring cartilage, the shield cartilage, the lid, and the two pyramids. You can then represented by this large working model, which enables me to imitate the movements of every cartilage and muscle.

THE **RING CARTILAGE** is the foundation of the voice-box. It

has the shape of an old-fashioned signet ring, the narrow part of it is in front, and the part corresponding to the seal behind.

THE **SHIELD CARTILAGE** is so named because it affords protection to the more delicate parts of the vocal apparatus, the real tone-producing element, which it contains. The shield consists of two plates, each of which has two horns. With the upper horns the shield is attached to the tongue bone, and with the lower ones it is fastened to the ring cartilage, in such a way that it can raise upon it as upon a pair of hinges. You see here the ring-shield muscles, which go from the ring to the shield, and which have the effect of drawing, by their contraction, the front part of the shield down upon the ring.

THE **LID** is a flexible cartilage which allows itself to be drawn over the voice-box in the act of swallowing, &c., thus closing it, and preventing food or any other foreign substance from getting into it. I will now remove one of the plates of the shield cartilage, as though cutting it off with a knife. This enables you to see the remaining two cartilages—the pyramids—which were hitherto hidden by it.

THE **PYRAMIDS** are two triangular little bodies which are perched upon the highest part of the border of the ring cartilage, and which are capable of being moved in different directions with most surprising freedom and rapidity. They are drawn away from each other by the back-ring-pyramid muscles, and towards each other by the side-ring-pyramid muscles, assisted by the pyramidal muscle.

THE **VOCAL LIGAMENTS**, the real tone-producing element, are two edges of elastic tissue covered with a delicate white membrane, attached in front to the shield cartilage and behind to the pyramids. They are commonly called the vocal cords, but this term implies strings, like those for instance of the violin, attached only at either end, and free all round everywhere else. The vocal ligaments, however, are free only at their inner edges. The designation of vocal cords is, therefore, calculated to create a totally false idea, and I think the sooner its use is discontinued the better. The stream of air passing between these ligaments throws them into vibrations, and these in their turn set the stream of air passing between them into regular waves. In this manner and in this manner alone is vocal tone produced, whether it be called *clear*, *falsetto*, *head*, or any other name. There are still some who teach different doctrines, and the temptation to refute them is very great; but time is on the wing and I must proceed.

We have now seen that the vocal ligaments are stretched from the front of the shield across to the pyramids, and that these are attached to the upper border of the ring. You also remember that the shield moves upon the ring as on a pair of hinges. If, therefore, the ring-shield muscles contract, thereby approximating the shield cartilage and the ring

cartilage, the result is that the vocal ligaments are put on the stretch. That such is really the case you see when I execute the movements just described upon my working model. The stretching, then, of the vocal ligaments, by which the pitch of the tones produced is raised, is the consequence of the contraction of the ring-should muscles. These are opposed by the shield-pyramidal muscles, which run parallel with the vocal ligaments, and form a solid body with them from the shield to the pyramids. These muscles, having overcome the resistance of the ring-should muscles, draw the shield cartilage up again, thereby relaxing the vocal ligaments. The effect of this, of course, is to lower the pitch of the tones produced, but the shield-pyramidal muscles can, under certain conditions, produce the very opposite result by powerfully pressing together the vocal ligaments. They play indeed a most important part in the formation of tone, as may be seen from the fact that paralysis of them causes total loss of voice.

We have thus seen that these two pairs of muscles, namely, the ring-should muscles and the shield-pyramidal muscles, by stretching, slackening, and compressing the vocal ligaments, mainly govern the pitch of the tones produced by their vibrations. In a state of repose, however, the vocal ligaments diverge behind, and they must be brought parallel to each other before they are ready for the production of sound.

On my next working model you get a view, from above, of the bases of the pyramids, with the vocal ligaments attached to them. These meet in front but diverge behind, so that the space between them is triangular. This space is frequently, even in scientific works, spoken of as the *glottis*. The proper translation of this word, however, is tongue, or tongue-hole, and it signifies the vibrating element in the voice-box. It is manifestly wrong and confusing, therefore, to make use of the same term to designate the space just mentioned, which should be distinguished as the *chink of the glottis*, or the *vocal chink*.

I now imitate the action of the back-ring pyramidal muscles, with the result, as you see, of enlarging the chink of the glottis, which resumes its former size as soon as I allow the back-ring pyramidal muscles to relax. These movements take place during inspiration and expiration, sleeping or waking, from the first moment of our lives to the last. The back-ring pyramidal muscles have consequently the all-important function of keeping open the gate through which the air enters the lungs. They have, therefore, been poetically called "the guardians of the portal of life." I now work the side-ring pyramidal muscles, and you see that the result (in which they are assisted by the pyramidal muscles) is to close the chink of the glottis, and the vocal ligaments are thus ready for the production of tone.

The **POCKET LIGAMENTS** are two folds of mucous membrane, chiefly filled with glands, which run above and parallel with the vocal ligaments, which they are intended to protect. They also form a part of the resonance apparatus, but they have absolutely nothing to do with the production of tone.

THE **POCKETS** of the voice-box are two cavities, the entrances to which are formed by the spaces between the vocal ligaments and the pocket ligaments. The dimensions of the pockets vary very considerably, and they are covered with a large number of small glands. They are the means of isolating the vocal ligaments, thus enabling them to vibrate freely and without hindrance. They also serve to keep the vocal ligaments supplied with that moisture without which these could not produce tone.

A **TUBE** is formed above the pocket ligaments by the upper part of the pyriform and the lid, united by two folds of mucous membrane. This tube, together with the pockets just mentioned, is the first part of the resonator, the remaining parts of which are THE **PALATE**, THE **CAVITIES OF THE NOSE**, and THE **MOUTH**. These require no particular description, but I must mention—

THE **SOFT PALATE**. This is a movable partition, by means of which either the nose or the mouth may be completely separated from the throat. Few persons have any idea of the important part it plays in vocalisation. It is aided in the formation of all pure vowel sounds, then shutting off the nose from the throat; and this closure is found to be looser for *ah* and tighter for *e*; the intermediate vowels being *a*, *o*, and *ou*.

THE **LARYNGOSCOPES** is an instrument which enables us to watch the movements of the vocal ligaments in the production of sound. Its importance cannot be overrated, as it establishes as facts phenomena which could previously only be guessed at. We, as musicians, ought to be very proud that this wonderful little instrument is the invention of one of our number, M. Garcia. I would insist upon this very strongly, because the honour has been claimed for others, but unjustly so. No doubt experiments in the same direction, though for a different purpose, had been made in former times, but they had all failed, the utmost that was achieved by one observer being that he saw the upper rim of the lid. M. Garcia, as you know, bravely succeeded where all his predecessors failed, and he is, therefore, to all intents and purposes the inventor of the laryngoscope, and his name will live as long as suffering humanity is relieved by means of this instrument, which has been turned to splendid account by the medical profession.

The laryngoscope in its simplest form is nothing but a small circular mirror fixed to a piece of wire, such as I now hold in my hand. If I were it to prevent its getting damaged

by the moisture of the breath, and then introduce it into a person's throat, allowing the rays of the sun to fall upon it, the light will be reflected upon his vocal ligaments, the image of which is, at the same time, distinctly visible in the mirror. Now, unfortunately, the sun is not always shining when we want to make these observations, and it became necessary, therefore, if the instrument were to come into general use, to have recourse to artificial light. Professor Caserink, of Fench, accordingly invented an apparatus similar to the one which I am exhibiting here, and with which I can not only make observations upon other people, but by means of which I can also demonstrate my own vocal ligaments in the act of singing to any one wishing to see them.

Now, looking down a person's throat, we see the vocal ligaments at the bottom of the tube which is formed by the upper parts of the pyriform, the lid, and the folds of mucous membrane uniting these parts. The vocal ligaments being purely white, while everything else we see is of a pinkish colour, we cannot possibly mistake them, and if we ask the person operated upon to sing the vowel *a*, as is usual, we shall get a very perfect view of them. We plainly see their movements, and we notice that these differ according to the registers which the singer employs. In this country we are accustomed to speak of the chest, the falsetto, and the head registers. In chest voice we notice that the vocal ligaments are moved by full, loose vibrations through their entire thickness. In falsetto voice the body of the vocal ligaments remains perfectly still, the vibrations being confined to their thin inner edges. In head voice the vocal ligaments are seen to close firmly together for about one-half of their length, leaving an oval orifice in their anterior part, the inner edges of which are vibrating.

We thus see that the names *chest*, *falsetto*, and *head* are partly arbitrary; but more, they are also misleading, and they help to confuse the ideas on a subject which is most important, and on which a clear understanding is imperatively needed. I therefore propose, in accordance with physiological facts, to use the terms *thick*, *thin*, and *small* registers instead of *chest*, *falsetto*, and *head* registers. I have just explained to you the mechanisms of these registers. They are distinct and unmistakable, and I cannot understand how it is possible that some laryngoscopists have never seen them. Perhaps it is because they are medical men, who are naturally more on the look out for symptoms of disease than for physiological differences. It must also be admitted that the registers can only be properly studied upon persons who know exactly what is wanted, and who are perfectly accustomed to laryngoscopic experiments. When, for instance, a singer has not sufficient control over his tongue to keep it quiet without holding it with a pocket handkerchief, the investigation is not likely to lead to very satis-

factory results, and when the touch with the mirror causes any inconvenience, however slight, the result must obviously be a failure. At any rate, I am prepared to demonstrate the *diak* and the *thia* registers in my own throat, and I am sure that no one not wilfully blind will deny their existence.

So far then I do not apprehend any difficulty. But hitherto I have only spoken of the chief registers of the human voice. We know, however, that there are, besides these, subdivisions; and I will confess at once that I do not think they can be satisfactorily demonstrated with the laryngoscope. As all events the differences are so exceedingly minute as to be capable of being difficultly described by different observers, and I do not think, therefore, that much importance can be attached to them.

In conclusion, I wish to refer to the doctrine which is still held by some, that the female voice is simply a reproduction of the male voice an octave higher. This is clearly shown by the laryngoscope to be a mistake. Leaving subdivisions out of consideration, the male voice has but two registers, the *diak* and the *thia*, while the female voice has three registers, the *diak*, the *thia*, and the *mesall*. I regret that time does not permit me to go more fully into this most interesting subject, and I will bring my paper to a close with the following quotation from that eminent physiologist, Dr. Merkel, of Leipzig: "The chest register ceases, very curiously, in both sexes on one of

the notes from  so that if it is about one octave lower in man than in woman."

DISCUSSION.

The Rev. TACON HILGREN asked if the same remarks with regard to the vocal organs would not be applicable to a boy with an unbroken voice as to a female singer.

Herr BAUMAN said that was so. He had had the opportunity of studying the head voice in the case of a boy in Berlin. The soprano voice of a boy was similar to that of a woman.

MADAME LEO GALINSKIANSKY inquired what was the meaning of the breath being taken up by the "Schlüssenberg," which Herr Helmholtz so much objected to. She fancied that without doing so the singer would not have so much breath; at any rate, that had always been her practice.

Herr HILGREN said this was a most important point. Having repeated what he had stated in the paper with regard to the

three different modes of breathing, he said it could be easily proved, by the aid of the spirometer, that by contracting the *midriff* you got much more air in the lungs than by elevating the top of the chest. He found that by contracting the *midriff* and expanding the chest sideways he could get 200 cubic inches of air, as shown by the dial of the spirometer, whilst by collar-bone breathing he got only 180. This was easily accounted for by considering the shape of the lungs.

Mr. LEWIS BROWN seemed as a physiologist to thank Herr Behnke for the great help he had rendered from the medical point of view. Until recently it was rather a reproach to singing-masters that they did not study physiology, but that had now passed away, and he must join in giving all honour to Signor Garcia, a professor of singing, for his share in the invention of the laryngoscope; and the more so since, although his experiments were only directed to voice production, and to the discovery of the mode in which musical notes were produced, the result had been to discover accurately the causes of, and so to assist in curing a number of previously obscure diseases. It would be impossible for the most distinguished physiologist to have treated this subject in a clearer manner than had been done by Herr Behnke, and he might say that the only points upon which he should differ from him were so small that they would make no difference in the teaching of a pupil. He would first beg to second most heartily Herr Behnke's remarks about respiration, although perhaps he might put it in rather a different form. The diaphragm pulled down the lungs and enlarged them in a vertical direction; the ribs did not act precisely at the same time, but followed. The first act of breathing was abdominal; then the ribs took up the action and increased it in the lateral direction. If you carried it farther than that you would, by a deep, forced inspiration, and a raising of the shoulder-blades, really diminish the length of the lungs in a vertical direction and press them upwards against the windpipe, and this exaggerated respiratory effort would result in decrease of respiratory power, and consequently of the volume of the tone to be produced. It was perfectly true also, as Herr Behnke had stated, that the essential of all musical tone lay in the vocal cords. Nevertheless, it must not be supposed that all other parts of the vocal apparatus were unimportant. If that were so, why was not the *ves larynx* stop of the organ a better imitation of the human vocal? He could not quite agree that the ventricles of the larynx had no other purpose but to secrete mucus. Nature had placed glands all through the larynx and through the mouth, and he did not think it made the ventricle, which had the power of contraction, for nothing; nor could he quite agree that what he termed the "pocket hands" were solely designed for the protection of the vocal cords. In his trans-

lution, to which Herr Behcke had so kindly drawn attention, he mentioned the fact that Dr. Jekoffy, of Puzh, in a case where a patient had lost the vocal cords, was able by galvanism to stimulate the false vocal cords or pocket bands, and to make them take on the action of the vocal cords, so that the patient obtained a very fair speaking voice. He thought they should be careful in charging names, and was not quite certain that these organs, formerly called the "false vocal cords," might not with advantage have retained that name, or be termed "supplemental vocal cords." However, the fact remained that between these two vocal bands there was a ventricle which could be changed in shape by the action of the muscles. It certainly had not anything to do in the primary production of musical tones, in that Mr. Brown fully agreed with the author; but it might well assist in modifying its quality. As was well known, the soft palate, by alteration of tension, greatly modified the quality of certain notes. Thus it was pressed up tightly when a high note was produced, and took quite a different position in singing a low note. Was it not possible that the soft palate did assist in alterations of pitch as well as of quality? Herr Behcke had illustrated the difference between the male and the female voice. To some extent, however, it appeared to him that the difference was due to difference of size. The vocal cords of the female were considerably shorter than those of the male, as were those of the child than those of the adult; and of course the shorter the cord the higher the note. Mr. Brown concluded with a few remarks on the relation of the different capacities of chest, and of shape and quality of voice according to the height of the individual.

Mr. Serris was somewhat astonished that Herr Behcke did not attribute more importance to the false vocal cords and the pockets. His friend, Mr. Luzzo, had for many years called attention to their importance in connection with vocalisation, and he was sorry his views were not more widely known. No doubt there was a difference between the right and wrong production of tones, and it was important that teachers should be able to describe to their pupils how to produce the right tone. It was most difficult to explain what went on inside the throat to pupils who were unacquainted with physiology; but the theory of Mr. Luzzo, based on the observations of Dr. Wylie, was that, in order to produce tones rightly, the ventricles of the larynx must be fully inflated in the first instance, and that this was to be accomplished by catching the breath. Consonants were generally looked upon as simply obstructions to sound. If you closed your lips firmly and blew against them, the more strongly you blew the more they would not open—the breath would not part them; but when you let them open there was an explosion, and the

sound of *p* was produced. If the tip of the tongue were put against the palate you also produced an explosive, the sound of *t*, and farther back the *k* sound. If the obstruction were put still farther back, the lips of the false vocal cords were forced to meet in the throat and cut off the possibility of breath coming through. The ventricles then became fully inflated, the larynx rose in the throat, and upon allowing a small amount of breath to escape you produced the slight sound generally called the attack of the glottis, which was conducive to the force, purity, and clearness of the succeeding vocal tone. Since he had become acquainted with this matter he found his teaching very much simplified, for whereas before he found it very difficult to make pupils understand the way in which to produce a satisfactory voice, since he had known this he had had no difficulty, except one of time, in obtaining from all candidates a tolerably good tone. He did not believe that all were endowed with good voices, but he did believe that all had improvable voices if only the tone were produced rightly, and that, if the right method were followed, there would be a considerable accession to the number of good amateur singers. He had a communication showing that 1750 years ago a very distinguished physiologist, Galen, was nearly as well acquainted with the action of these ventricles as Dr. Wythe himself, as was shown in an article in the *Omnibus* for the present month, by Mr. Luzzo, in which he quoted a translation from Galen by Mr. Gordon Holmes. After quoting from the above article, Mr. Stead contended that on this matter hinged the rising of the larynx in the throat and the forward production of voice. Madame Sailer attributed it to the position in which the vowels were formed in the mouth, but he considered it depended mainly on the rising of the larynx in the throat consequent upon inflation of the ventricles. When the larynx rose the ring cartilage rose more quickly than the thyroid cartilage, thus causing the vocal ligaments to assume a somewhat slanting position in the throat, and by that means was attained a more forward production of what he called the raw material of sound. Generally speaking, in training voices this raw material was not sufficiently considered; but he thought it was a mistake to teach the enunciation of consonants and speech sounds before the raw material of the voice was properly developed. He thought physiologists and musicians should give greater attention to the action of these ventricles in voice production, and should experiment upon themselves to see whether, by careful attention to producing the voice in the way he had indicated, a purer, clearer, and more sustainable sound did not result.

Mr. EDWARD HARWITZ, as a pupil of Signor Garcia, said that teacher was very particular in making his pupils breathe in the manner called the *metral* and *rib* breathing. He also

laid great stress on the shape of the pharynx in the production of sound.

The Chairman said he did not think either Herr Behnke or Mr. LITTLEBOURNE was quite correct in all they had stated on the matter of breathing. He knew from experience that many women could not breathe in precisely the same way as men. The latter could undoubtedly sing without clavicular breathing at all, and those who used that method committed a great fault, but he was quite certain that with the female voice it was not possible, or at any rate he had not met with a case of a lady who could sing properly simply breathing from the nostrils, but she was also obliged to use the clavicular breathing. It certainly should be done in such a way that the observer saw as little of it as possible, but experience convinced him it was impossible for a female to take a full breath without clavicular breathing. At the same time the other breathing went on simultaneously. In fact good singers used the three methods together, and by that means they were able to produce long-sustained sounds, and to make the splendid phrasing which some of them attained. Mr. STED had remarked that pupils were sometimes taught to sing with words, and thereby the chance of cultivating their voices properly was lost; but it was an old theory amongst good musicians that voice tone was one thing and pronunciation another, and that the two things should be taught separately. The question of the falsetto, the head falsetto, and the mixed voice was not yet understood, he believed. The falsetto in women was one kind of voice and that known to cathedral men another altogether. He himself had a chest voice, a mixed voice (which he believed Herr Behnke had accurately described as a falsetto), and he also could, if he pleased, sing in a purely falsetto voice, and he did not think it had yet been shown how that was accomplished. In conclusion, he begged to propose a special vote of thanks to Herr Behnke for his valuable paper.

Mr. LITTLEBOURNE said he did not differ at all with the Chairman about breathing, nor he thought did the author of the paper. The clavicular breathing was an extension, and to his view, despite what Madame Goldschmidt had said, an unnecessary extension of the other two forms. He quite agreed that a woman must breathe more with the upper part of the chest than a man, but in no case should the respiratory act be carried to the extent of raising the collar-bone. If the pupil would sit with her arms over the back of the chair the collar-bone could not move, and it would still be found that a full and steady tone could be produced. Clavicular breathing was at the root of almost all cases of voice production, especially of the tremolo and vibrato, so common to pupils of certain schools.

The vote of thanks having been carried unanimously,

Dear Brewster said it would be impossible for him to reply to all the observations which had been made, many of which touched points which he had not mentioned in the paper, and if he were to go into them it would take him too long. He had not started any theories, but only told them what he had seen and what he could prove. With regard to Mr. Lane's theory, as mentioned by Mr. Stead, he disagreed with it in toto. Mr. Lane maintained distinctly that the female voice was nothing but a reproduction of the male an octave higher. That was not true, and he should dispute it to the last. He was now engaged upon a book on the subject for a London firm,* and in that book he proposed to deal with Mr. Lane's statements, and he hoped he should succeed in utterly confuting them.

* Since published—'The Mechanism of the Human Voice.' London: John Curwen and Sons.

W. H. MONK, Esq.,

IN THE CHAIR.

ON A MODE OF PRODUCING CONTINUOUS
NOTES FROM RESONATORS.

By R. H. M. BEAUCOURT, Esq.

TENET who were present at the reading of Mr. Spottiswoode's paper, "On Beats and Combination Tones," last session, may remember an observation made in the course of the discussion to the effect that the excellence of the apparatus employed goes for a great deal in acoustical investigations. I have to bring before you to-day an attempt to obtain efficient apparatus, somewhat less costly in its construction than that exhibited to you by Mr. Spottiswoode.

The great step which is the foundation of the modern analysis of musical sounds was made by Ohm. Helmholtz says* "Ohm was the first to declare that there is only one form of vibration which will give rise to no harmonic upper partial tones, and will, therefore, consist solely of the prime tone." Without now entering on the question whether absolutely pure prime tones can exist in nature, we can well understand that the property which defines the pitch of a note may be supposed to exist in its most definite form, and entirely free from the admixture of other notes. These pure primes, whether audible or only ideal, are the elements by the combination of which all the composite notes of nature are formed; and, as all analysis depends on our knowledge of the elements whose presence we have to ascertain, the study of the properties of these pure prime tones is, in our state of least, the foundation of all acoustics.

* Helmholtz's "Helmholtz," p. 24.

The first step towards the study of pure prime tones is to produce them either pure or as pure as may be. The apparatus I employ to produce a pure prime tone consists of a bottle blown by the mouth of an organ pipe. The sole originality to which I can lay claim is the practical arrangement of the combination. For it is matter of common knowledge that the note produced by a properly blown bottle is an approximately pure prime tone. The notes used by these experimenters who have employed bottles were generally produced in this simple way. I take one end of this tube in my hand, the other end being attached to the bellows, and hold it in a particular way over the mouth of this bottle. A note of pure quality is produced. Now, if the end of a tube were firmly fixed in this position it would make a very good arrangement for the purpose; and I believe some experimenters succeed in fixing the tubes in this way. I have not found this process advantageous. It is necessary for convenience that the arrangement adopted should possess some stability—should stand a certain amount of knocking about—but the slightest derangement of the tube prevents it from speaking. Again, it is desirable that we should have the means of tuning the bottle or resonator employed, as well as means of connecting its interior with the ear, when used to search after seconds. All this is met by the construction I have adopted. I hold in my hand the first instrument that I made in this way. I made it in a curiosity long ago. It gives a very fine note. It is simply the top of an organ pipe slipped into a bottle. I now make them like this one which I hand round. (See woodcut at the end of this paper.) The bottles ought to be an inch and a half or two inches, at least, across the mouth, so as to receive a cork or bung large enough for the purpose. The largest bottles that can be got do very well for bass notes. For notes about middle C, and higher, I find a kind of bottle called honey jars convenient. They have wide mouths in proportion to their size. These holes are to be made through the cork—a large one and two small ones. The large one is to receive the portion of the organ pipe by which the bottle is sounded. The two smaller ones receive two small glass tubes. One of these can be used to communicate with the ear by means of the apparatus I have devised for the purpose. The other reaches to the bottom of the bottle, and is used for introducing water or removing it, for the purpose of altering the pitch. The glass tubes are of about one-eighth of an inch diameter. They are bent over at right angles just above the cork, so that india-rubber tubes may be conveniently attached to them.

The organ pipes made use of are generally old metal pipes of the octave between two feet and one foot. The metal must be pretty soft, so as to stand the shaping without injury. The diameter used may vary from about an inch and a half

nearly down to half an inch. For notes about middle C, I find one inch to three-quarter inch diameter convenient. The cylindrical part of the pipe is cut across, three or four inches from the mouth. The part employed is the foot, with what remains attached to it. The cut end of this is smoothed off and fitted into the cork. The mouth is then cut up considerably. A rough rule is to make the height of the mouth equal to its width. This height may sometimes even be exceeded with advantage. The upper lip of the pipe on which the wind strikes is slightly curved outward, with a hammer or the round edge of a screw-driver, so that the wind strikes a rounded surface, and not a sharp edge. The bottle-pipe is then voiced; it will often take more wind than the pipe did before, both at the windway and at the foot. The glass tubes can be heated in the flame of a common lamp; a gas flame is convenient for the purpose. It is necessary to heat the ends where the tube has been cut with the file; or otherwise the sharp edges are liable to cut and tear the corks and tubing. The resonator can be made sharper in pitch by introducing water into it through the tube provided for the purpose. It can be tuned in this way to any note higher than the note it sounds when empty. The mouth-piece generally has a moderate range throughout which it speaks best, and a more extensive range throughout which it speaks somewhat less well.

Applying the ordinary theory of the harmonics of organ pipes, the tone should be entirely free from harmonics, as it cannot derive them either in the manner of open or stopped organ pipes. The tone is really very pure if the instrument is well arranged; but I have not found it in any case absolutely free from harmonics, any more than I have found any other so-called pure tones to be free from them. In some cases the traces of harmonics have been so small as only to be detected with difficulty; but in other cases a note has been obtained in which the twelfth of the tone is remarkably prominent. This is curious, as it shows that these harmonics can arise where there can be no application of the theory of stopped pipes, which has hitherto been supposed to be the only way of accounting for their production. I now sound a deep note of very pure quality.

The first experiment I shall endeavour to show you is one in which I will ask your co-operation. It is to illustrate the way in which a continuous pure tone forms in a closed space a series of what may be called loci of sound, separated by intervals where the sound is less heard, or not heard at all. In the language of acoustics, we may say that the space is occupied by stationary nodes and loops. Now I will again sound the six-foot F; and I will ask those of you who hear the note to hold up your hands, or give some indication that you hear it well. I must observe that the loci formed under these

circumstances are sometimes small; and it may happen that there is only a single person within hearing of such a focus. So I must depend upon you all to give some indication if you do hear the note.*

These effects are the more marked the greater the resonance of a room is. We have here one of the elements in the explanation of the fact that low notes are so particularly unmanageable in buildings possessing great resonance. A note having a wave length of twelve feet may, if of pure quality, be almost inaudible throughout a great part of a room, such as we meet in; the points or foci at which it is concentrated occupying altogether an inconsiderable space.

It is possible, by making use of the fact I have just brought before you, to get some notion of the composition of any given note. The harmonics generally have some foci at those portions of the room where the fundamental is silent or nearly so; and by listening at these points, harmonics can often be detected without further analysis. It is possible that some of you may have already detected the harmonics in these notes by this means. The use of this method generally requires more perfect silence than can be obtained in a meeting; but it is on the whole an efficient method. The complications introduced by resonance are avoided, and the ear feels more confidence in the result, as it is heard more directly. For a thorough investigation, however, both methods ought to be combined.

I will now show you a contrivance I have had constructed, which is of great use in the employment of resonators for the detection of the elements of compound sounds. The instrument you see consists of a bent copper tube, with two ear-pieces like those of an ear trumpet. These pieces can be brought opposite the two ears, the connecting tube passing under the chair. The ear-pieces are then turned round by the finger and thumb, and they advance along screws until they enter the passages of the ears. I had it convenient to cover the ivory ear-pieces with a double thickness of small india-rubber tubing, which assists in closing the ear passages to external sounds. External sounds cannot be entirely stopped out by any mode of closing the ears, but the use of this tube stops them out as effectually as anything. The copper tube can then be placed in communication with an india-rubber tube connected with the resonator or any source of sound. You can understand that this instrument, when connected with the vibrator of a

*The sound appeared to be universally heard. It was not possible in a moment to get the audience to distinguish between places where it was loud and soft. But later it was fully noticed by several that even small movements of the head of the listener produced considerable differences in the amount heard.

† The instrument was made by Mr. Walker, of George's Street.

resonator, is a test of considerable delicacy for the presence of the note to which that resonator would respond.

The simplest use to which this arrangement can be put is the examination of notes, as to the presence or absence of the various partial tones in them. Suppose, for instance, I want to ascertain if there is any octave in my low *F*: I should place the octave resonator in communication with the ear, and listen. This kind of examination is one of the most difficult of these problems; and it requires considerable practice and care to make sure of the result in some cases. If there is any octave at all in that note (low *F*), it is very little indeed. Sometimes I have succeeded in perceiving it; sometimes I have failed to do so. The twelfth, on the other hand, can be heard distinctly with the unaided ear.

It is necessary to notice that what is to be listened for with the resonator is the note in question sounding continuously. Every shock in the apparatus, every noise in the room, gives rise to a development of the note of the resonator, which dies away again immediately. It is only in the absence of such shocks and noises that the presence or absence of the continuous note sought for can be ascertained with accuracy. I find it advantageous to hold the tube between my fingers, and open and close it alternately. The true nature of what comes to the ear through the tube is more distinctly ascertained when compared with the intervals of silence.

This apparatus is also employed for the purpose of investigating the nature of beats; and it was mainly with this object that it was devised. The principle that we admit as the foundation of the theory of beats is that all beats consist of variations of intensity of musical notes.* The various objections that can be brought against our views frequently involve the assumption that beats exist which are not to be referred to this cause. The views of Koenig, as well as those based on the work of Robert Smith, who may be called the founder of the old school of acoustics, all involve the supposition that beats exist which are to be referred to causes different from the variation of notes. We have, therefore, to analyze experimentally the cases in which beats of this kind have been supposed to arise, to examine all the notes present, to see whether it is really true that beats ever arise in cases in which no note varies in intensity.

I will take the case of the fifth, as one of the simplest. When it is slightly out of tune, beats are heard. We have to examine the various notes present to find out what variations in intensity take place. Say that we take the fifth *just*. We first examine the separate notes, and find that they both contain octave and twelfth in small but appreciable quantity.

* There is generally a variation of pitch as well.

We then form the combination, and listening with the resonators to the single notes one after another, we should find (1) the two fundamental notes are perfectly steady, and unaffected by any warbling; (2) the note c' , which is the octave of c and twelfth of f , varies in intensity or produces a beat.

I have here the apparatus arranged for this last demonstration, but I cannot well show it you convincingly, as it depends on what I hear through the instrument. Moreover, these are fundamental experiments in no way new in principle. The apparatus is what I have to show you.

I will now mention the analysis of the beats of the octave slightly out of tune. This is most easily performed by obtaining the feet and places of silence formed by the lower note. When the notes are sounding, and one moves about the room, passing between the feet and places of the silence of the lower note, one notices immediately that the beats accompany the lower note. They are heard most strongly in its feet; and if a place can be found where the lower note alone does not sound at all, the beats are not heard there. If I now sound the notes of the imperfect octave in this way you may possibly be able to verify this partially; but it can hardly be done satisfactorily without moving about in the room. There is also a beat of the upper note; but where, as in this case, the lower note contains little octave, this beat is of small intensity. In fact it is as difficult to hear at the octave as the low note.

Another experiment which I have here is an arrangement for listening for a difference tone through a resonator of its own pitch. The two notes f and c' produce F strongly as a difference tone. A resonator tuned to F is attached to the one-piece. The effect is always, so far as I know, to extinguish the difference tone. It appears incapable of being heard through a resonator. We notice incidentally that the other combination tone c' , which has occasionally been noticed but not satisfactorily explained, is present in considerable intensity. If I now allow water to flow out of the resonator c' , it approaches f ; the lower combination tone falls gradually, and the upper one rises. This is one of the best modes of calling attention to the combination tones. The listening resonators are sometimes made, as you see, distinct from the sounding ones. A cork with a hole bored in it converts a bottle into a simple resonator very conveniently. To depress the pitch, a bit of the cylindrical part of an organ pipe may be inserted. The glass tubes as before. The wind is distributed to its various destinations by means of this small wind distributor—a miniature organ wind-chest with twelve slides, which admit the air to pipe feet, on which flexible tubes are fitted.

I have attempted to place before you an easily accessible form of apparatus for performing some of the fundamental

experiments of atomies, in the hope that some may be induced to construct similar forms of apparatus for themselves, and that the knowledge of this part of the subject may come to be founded on actual experience to a greater extent than is now generally the case.



Section of speaking apparatus, with organ pipe mouth-piece, syphon with stop, and receiver for tuning; also flexible tube for putting into the ear when used as an ausculting receiver. This tube can be also used for gas flame experiments.

SOME EXPERIMENTS WITH A REVOLVING STOP-COCK.

By R. H. M. BOSANQUET, Esq.

In certain sections on acoustics we find a stop-cock mentioned, which could be opened and closed with great rapidity. This instrument is said to have been constructed by Professor Robinson. In the article on "Sound" in the "Encyclopædia Metropolitana," Sir J. Herschel mentions this instrument, and conjectures that its action must have been obtained by causing it to revolve. Several problems suggested themselves to me which might be dealt with by means of such an instrument. I caused this one to be constructed, and can recommend it, not only for the purposes of the problems in question, but also as a simple mode of demonstrating roughly some of the elementary phenomena of sound which generally require the term, a much more costly machine.

A long, narrow iron plate is attached to a heavy block of wood, and forms a firm foundation for the instrument. This consists of two parts—a wooden wheel, twenty inches in

diameter, having a groove cut all round the edge to carry the cord; and the stop-cock itself, which has a small metal wheel at right angles to its axis, similarly grooved round the edge. The diameter of the metal wheel is one inch, so that one revolution of the wooden wheel corresponds to twenty turns of the stop-cock. The tube in which the stop-cock is inserted is at right angles to the line of centres; it is about two inches long from end to end. Half an inch at each end is covered outside with a shallow screwed surface, fit for entering into the tubes between which the stop-cock is to be interposed, and forming tight joints. The cord is a piece of gut, jointed with a metal hook and eye, in the manner practised for the purposes of the mangle-press. I have also driven the machine satisfactorily with a piece of thin string tied at the ends.

I have two stop-cocks, which are used for somewhat different purposes. They can be interchanged at pleasure. The one has rather a small bore, and is pierced by two channels at right angles. The other has a much larger bore, and has only the one channel. The two-channelled stop-cock opens and closes the tube four times in each revolution; the one-channelled stop-cock opens and closes the tube twice in each revolution.

The first thing we can show by this means is the production of a note by forcing air through the stop-cock as it revolves. With this primitive apparatus it is difficult to secure any great speed, and middle C is about the best of what we can arrive at with the two-channelled stop-cock, lower C with the other.

The note is not very perfect. If, however, I cause the issuing jet of air to enter a resonator, I get some remarkable effects, when the jets have velocities which correspond in certain ways with the pitch of the resonator. I connect the stop-cock, by means of a piece of tubing, with this bottle, which now resonates to a note not far from lower C. A greater volume of tone is produced by the large bore stop-cock, which will now be placed on the apparatus. As we begin to turn the machine, while the velocity is yet low, there are one or more points at which a great volume of tone is produced. It is difficult to turn the machine by hand uniformly enough to produce these effects with great clearness. But their presence is easily demonstrated. As we increase the speed there is no farther development of tone until we reach the neighbourhood of the note of the resonator, when the tone begins to swell out. Ultimately, when we reach the note of the resonator, a tone of surprising volume is produced. The explanation of the resonance to the low note appears to be this: when the speed of revolutions is such that the resonator is one of the conditions of the note due to the jets, that condition is selected from the mass, and strongly reinforced. It must be remembered that the effect of a series of discontinuous jets of air is

to construct a sound in which theoretically the partial tones are all of the same strength, the fundamental included; so there is plenty of overtone for the resonator to take hold of. At the same time, there is still a certain amount of the fundamental pervading the whole machine; and this appears to combine with the overtone in the resonator, and produce the peculiar sensation of depth which occurs in the sound in question. As to the excitation of the resonator by the jets, which constitutes a note of its own pitch, it is a simple illustration of well-known principles. I have sought to use this arrangement for the purpose of obtaining some information as to the mechanical equivalents of sounds of different degrees of loudness. It is easy to see that the mechanical work of the bellows is here transferred into sound in an advantageous manner. If then we measure the work on the one side and the sound on the other, we may expect results which may be at all events not without value as bearing on the question. The execution of this project requires special apparatus for securing uniformity of motion in the machine, and other things which have not yet been carried out. But I may briefly lay before you, as specially a problem for musicians, the question of the measurement of the loudness of sounds, or the reduction of the estimation of loudness to definite measure. We have marks of loudness from *fff* to *ppp*. Let us arrange these in order, and form out of them a scale of loudness proceeding by uniform differences of sensation. We may further extend the scale to sounds louder and softer, respectively, than sounds practically used in music.

SCALE OF ACOUSTIC SOUNDS.

Not used in music.	<i>fff</i>	1.	Steam whistles. Noises that cause pain.
	<i>fff</i>	2.	
	<i>fff</i>	3.	
	<i>fff</i>	4.	Public speaking at the top of the voice.
Marks of loudness used in music.	<i>ff</i>	5.	Ordinary public speaking.
	<i>mf</i>	6.	Local ordinary conversation.
	<i>f</i>	7.	Ordinary speech.
	<i>mf</i>	8.	Soft speech.
	<i>pp</i>	9.	Strong whisper.
Not used in music.	<i>ppp</i>	10.	Faintest whisper. "Microscopic" sounds.

To the sound magnitudes corresponding to sounds used in music, I add one above for sounds louder than any that would be used in music, and one below for sounds fainter than any that would be used in music. That these larger sounds exist and are of importance you will understand if you remember

what you were told here on a former occasion, that a well-known investigator had to go away into the country and, when there, work at midnight, in order that there might be such silence around him as not to interfere with his results. The scale of sound magnitudes thus established is in many respects comparable to the scale according to which the magnitudes of stars are estimated. It is based on the estimation of different degrees of loudness, according to the experience of practical persons. This being so, a series of interesting deductions is at our disposal; but they are mostly of a theoretical nature, and I will only trouble you with practical points.

Suppose I form a note by means of the apparatus I described, or by means of a resonator, I require first to estimate its loudness, its position in the scale. I found this at first very difficult. The comparison of musical notes is a great assistance. Compare the sound, for instance, with concertina. I will assume that we find it of the fifth magnitude, or *mf*. Suppose, then, I measure accurately the work done by the bellows in every second of time. Then, with certain reservations and allowances, we may say the measured amount of work per second is the mechanical equivalent of a fifth magnitude sound having the pitch of the note produced, in a certain room and under certain conditions.

The other experiment, to which I have to invite your attention, is that for which I originally constructed the revolving stop-cock. If I interpose the stop-cock in the supply of wind to an organ pipe or resonator, and cause it to revolve, in some cases the pipe or resonator will still sound. The sound thus produced is sometimes continuous and sometimes intermittent, as the velocity of rotation changes. Whenever the sound is continuous, we know that the vibration goes on in the pipe long enough after the supply is cut off to bridge over the gaps in the supply caused by the stop-cock. When the sound is intermittent, we know that the vibration does not go on in the pipe long enough after the supply is cut off to bridge over the gaps in the supply. If the pipe or resonator does not speak at all we learn nothing.

I have not succeeded in making any open pipe speak satisfactorily under these circumstances. Why this is I do not know. But resonators and stopped pipes can be found which speak very readily, and offer a series of remarkable phenomena, according as the pressure of the wind employed, the speed of the stop-cock, and the other circumstances are varied. I will try to show you some of the principal phenomena; but they cannot be measured in an accurate manner without some means of turning the stop-cock at regulated speed.

The first effect is generally rough intermittent sound, which disappears suddenly when the stop-cock attains a certain speed.

When there is a full pressure of wind, the continuous tone appears at a certain definite point, and continues thence unchanged up to the highest velocity attainable. This point of first appearance of continuous tone furnishes the datum I am in search of. If, however, a less pressure of wind is employed, a series of curious phenomena occur, which I see, at least partly, the explanation of, but cannot go into in detail on this occasion. With certain velocities the pipe speaks more or less clearly, and these are generally separated by others for which the pipe is more or less completely dumb. It is easy to see, generally, that when the survival from one impulse into the next just begins to be felt, the pipe will speak most readily when the period of the impulse is an integral number (say four or five) of the vibrations of the pipe. This is the case where the pipe sounds for an isolated velocity. When, on the other hand, the survival is completely established, the impulses are all taken up and properly directed by the continuous vibration set up in the pipe. In this case the pipe sounds its note uninterruptedly through a considerable range of velocity. No doubt a better form may be given to the instrument; it may be improved in many ways. But I do not think it is likely that these questions will be attacked by means of a simpler or more accessible arrangement than the one I have brought before you to-day.

DISCUSSION.

Mr. CHAFFELL said he had a few words to say on some of the definitions, such as sub-harmonics, which he did not recognize under that name.

Mr. BOWEN said he only adopted that as a convenient description.

Mr. CHAFFELL said there seemed to be a considerable difference of opinion as to what harmonics were. He had had considerable practice in them for many years in connection with strings, and he knew that they invariably went in one order, if they were true harmonics arising from the string. Other sounds might be caused by the vibrations of a lock or hinge. The string divided itself into aliquot parts successively, the half, third, fourth, fifth, and sixth parts being well known consonances. He had seen as well as heard in very old pianofortes a string divide itself first into half, beginning from the place where it was struck, and then into three, four, five, six, seven, eight, and even nine parts. The seventh was always distinctly audible because it was an unusual sound, not being admitted in our musical scale. The word "harmonics" had been applied in another sense, to sounds which might be

produced by the air after it had passed through a resonated instrument, and then mixed sounds from other objects in the room by its waves. The definition of a true scale in the sound of a whole string or pipe and of its aliquot parts. He had produced, with Wheatstone's resonating tube, $3\frac{1}{2}$ octaves of true notes in that room, from the vibrations of one note. As the piston was moved up it diminished the size of the resonator, and thus raised the pitch of the note. He did not think, although it might be ruled so, that the true harmonics should be included with the secondary sounds created by other objects in a room. He would also remark that what are called Tartini's low notes are differently stated by different persons, as for instance by Tartini himself, by Dr. Crotch, and by Helmholtz. He had at last traced the cause of their various accounts, with the assistance of Professor Macfarren and of Dr. W. H. Stone. We may obtain from these low sounds all the notes they have named. The notes change very rapidly, and it is often difficult to catch the first feeble tone, which is the real root. It may indeed be below the pitch of the instrument upon which the experiment is tried. His object in these experiments was to test whether these sounds resulted from the coincident vibrations of the two upper notes, or were only "difference tones," as suggested by Helmholtz. He had ascertained that they were consonance tones, and that Helmholtz's term of "difference tones" was a mistake. The proof was obtained by trying the major and minor sixths. With regard to sounds which had received new names, such as "combination tones, partials, upper partials, lower upper partials, single, secondary," and so on, the names were new but the sounds were not. The supposed differences are imaginary, for all are harmonics of the fundamental note. Helmholtz's Resonators are musical instruments made to sound only one note, according to their size and capacity, while Wheatstone's Resonating Tube proves that all harmonics may be sounded from the one set of vibrations of the lowest note of the scale. Harmonics are multiples of the vibrations of the fundamental note. Thus, if the lowest c have 32 vibrations in a second of time, its octave will have 64, its twelfth 96, and its double octave 128 in a second. As to beats, they were caused by slight differences of pitch between two strings or pipes, and they disappeared when the string or pipe was in tune. These were very different from ordinary vibrations, for the former occurred but once in a cycle of vibrations and could easily be counted; therefore they were a guide to the tuner instead of an impediment. The vibrations themselves had often great power. Every lady who had a grand pianoforte knew that if one of her guests placed a tea-cup and saucer down upon it, the vibrations were so great as to raise the heavy lid of the pianoforte into vibration, and make the tea-cup

and saucer rattle. This would illustrate the power of musical vibrations in a room. It had been lately argued that all musical tones were compound. True that they are caused by numerous vibrations, but these only give continuance to the audible note. No other notes are audible with it, and the ears are the sole judges. Inferences drawn from resonators against the evidence of the ears are delusive, because the resonators are only set into vibration after the sound has issued from the instrument and arrives to them.

Mr. A. J. ELLIS, F.R.S., said with regard to several points which had recently been mentioned, some of his own experiments upon beats, which were still going on, confirmed a great deal of what Mr. Besançon had said. He had been obliged to make thousands of observations with Appera's instrument, in order to discover what was the error and what was the cause of it; and in doing so he had been hearing the real tones of one instrument with the real tones of another, without using any resonators; and he then got those peculiar effects which Mr. Besançon had mentioned, and the disappearance of the beats in certain positions. It seemed as if the ear was suddenly struck deaf, for by moving the head a little you heard nothing, whilst moving it into another position you heard the beats perfectly well. The beats he had taken with the harmonium reeds, one against the other, had been those which arose from fifths, sixths, seventh, and eighth, up to eleventh, thirteenth, and even sixteenth, and they always followed the rule which was obtained from the simple calculation of partial tones?

Mr. CHAMBERLAIN asked what he meant by partial tones?

Mr. ELLIS said he meant *Teil-töne* or *Partheil-töne*, which was explained in Helmholtz's book; and as a translation of that book was before the public there was no necessity for defining them further. He was using the word now merely to show that they followed the laws which Helmholtz laid down as being those of the partial tones. They had been more strongly marked in an experiment which he had been lately making upon comparisons of the real tones with the tones of tuning-forks. He took a tuning-fork and held it over a resonance jar which corresponded to its fundamental tone, which made it simpler and brought it out clearly and distinctly. He then sounded the real tones, and had been able to get creasible beats with what, according to Helmholtz, would be called the twentieth partial, by which he was able to determine the pitch of that real tone. Lately he had only been taking the sixth, seventh, and eighth partials, but he had gone much farther. The beats were perfectly clear and distinct, and you heard the lower partials, according to Helmholtz's nomenclature—at any rate, lower tones—going on perfectly undisturbed; and then, by means of the

tuning-fork, without any resonance box which would alter its shape continuously, you might pick out of the middle of these compound tones the one which was nearly in pitch with the tuning-fork, and with that it would beat. So much did it answer to its beat, that he could draw up beforehand a list of the tones. He was just then trying the eight-foot octave, and he calculated five, six, seven, and eight times the pitch of the reed, and that told him what fork he had to take in order to get the beats with the fifth, sixth, seventh, or eighth partial. They came out as clearly and distinctly according to expectation as could be conceived. There was nothing like the tones being generated by any apparatus. In Appan's instrument you were able to produce a loud continuous reed tone for any length of time without any sensible alteration, and from that long tone he could pick out any partial he pleased by means of beats and beats only, not by means of resonance. There could not be a much better illustration of the objective existence in the original reed tone of tones of the same pitch, or nearly so, as the forks he was using. He was using Schönbler's forks—not the original set, which had unfortunately been lost, but the second set made by Schönbler himself. With regard to the so-called combination tones, the difference or summational tones, or however the summational tones might have arisen from the sum of two difference tones, according to the theory of Appan and Dr. Preyer, he mentioned in giving an account of Dr. Preyer's paper before, that Dr. Preyer considered he had perfectly established that these difference tones were entirely subjective, as he could not by them produce any objective phenomenon whatever. That agreed pretty well with what Mr. Roussignol had said, although he did not yet see perfectly and clearly whether they were subjective or objective. He was much pleased at seeing a method of producing simply and easily these continuous tones, but the simple tone thus produced in the bottle itself was a kind of woody tone, not a bright clear tone like those produced from a tuning-fork. From the tuning-fork he had not succeeded in producing tones so as to count beats with anything higher than the twelfth, the octave he was constantly using, but there was a difficulty in regulating the comparative loudness of the two tones you wanted to beat together. He was unable to get any beats with the octave of Schönbler's forks from the higher parts of Appan's instrument. The reed tone entirely overbore it, and he should have to go two feet off in order to reduce the value of that tone and bring the fork close to his ear before he could hear the beats; even with two tuning-forks, held over the same oscillating jar, he had found constantly that it did not do to hold them at the same distance from the top of the jar, but the stronger fork must be held further off, otherwise the beats became blurred and indistinct; but when

the leader fork was held a little distance off, you would generally get the notes out as clear and distinct as possible. He had forgotten to mention, when speaking of two-note tones, that if you took beats of the fifth, beating four in a second, the tone you heard was a bright, bell-like, simple tone, and at the same time there was a kind of surge of other tones below and above; but it picked itself out with perfect clearness and distinctness, having the property of the simple tone. He should have to give a fuller account of his experiments at another time and place, and he only mentioned them now because it seemed to point out clearly that these things, which were called partial tones, quite fulfilled the functions of simple tones.

The Rev. THOS. HILMORE said he was not very conversant with all these wonderful experiments, but was much interested in sound. He thought the Society was very much indebted to Mr. Boussiquet for his interesting paper and for the experiments he had shown, which to him were very interesting, as he had not had the opportunity of seeing many such. He had the opportunity some time ago, when Dr. Donaldson was here, of seeing his apparatus, and from that he could confirm what Mr. Chappell had said, that when a long wire was put into motion by a double-beat bow, the nodal points and divisions were as clear as possible. All the works of God were very wonderful and gave scope for endless investigation. They all knew that the phenomena of light and sound had great affinity to one another, and that our ears were affected by sound and our eyes by light by means of motion. When you got either a column of air in a pipe or a wire in vibration, it vibrated first in its totality, and then you had what was called a pure sound. All the other sounds would, he supposed, arise from certain divisions of the vibration, as the propelling power which set the vibrating body in motion became weaker.

The Hon. SECRETARY asked if Mr. Boussiquet could explain how it was that these comparatively small bottles produced such exceedingly grave sounds. Was the bottle to be regarded as following the laws of a stopped organ pipe?

Mr. Boussiquet said the theory of resonances of that class was, he believed, now pretty well understood. Helmholtz had done a great deal towards clearing it up. The standard paper on the subject was one by Lord Rayleigh in the "Philosophical Transactions." The pitch depended on the ratio between the surface and the contents of the vessel. Having a neck to it made some difference, but by taking vessels which had a small orifice you would get very deep notes indeed. After a certain ratio the orifice became too small to take up the vibrations in the external air at all, and at that point it ceased to be of use; but there was no difficulty at all in getting a resonator of any size to any pitch. You

had only to vary the proportion between the orifice and contents of the resonator, and you might get a resonator of the size of a thumb-nail according to a thirty-two foot pipe.

Mr. WILLIAMS said he understood Mr. Bouanquet to say, in one part of his paper, that a sound could exist without vibrations.

Mr. BOUANQUET said that must be a mistake.

Mr. WILLIAMS said he considered each of these bottles as a veritable stopped diapason; it was nothing in the world else. If you took a soda-water bottle and blew into it, a very deep sound was produced, and every one felt astonished the first time that so small an article should produce such a grave sound. It was simply due to the smallness of the orifice and the largeness of the bulk. Sir Frederick Ouseley, many years ago, thought he had made a great discovery, and invented a stop which was pyramidal, being much larger at the top than at the bottom. With a very small box he undertook to produce a thirty-two foot tone. He never heard that tone himself, but it certainly was done on that same principle.

Mr. BOUANQUET said there was nothing at all new in the fact of using these resonators; in fact, he did not intend to bring forward anything in the nature of theory at all, but simply to show a practical adaptation of well-known things to the performance of certain experiments, in which many were interested and which were not generally known, because the instruments were complicated and expensive. The apparatus he had shown them was very simple, and any one could easily make it themselves at a small expenditure, and go through a great number of the experiments of Helmholtz; and it was only in that way that a sound knowledge of the subject could be diffused.

The CHAIRMAN proposed that the very best thanks of the Society be given to Mr. Bouanquet for his able paper, and for the great trouble he had taken to illustrate it. It must be understood that all the novelty consisted in the little apparatus he had been good enough to bring down. The theories referred to had been discussed elsewhere, and one might almost say were the subject of daily re-discussion and addition. Mr. Ellis was even now experimenting continuously upon the same musical natural phenomena, and they were very much indebted to Mr. Bouanquet for his kindness in explaining a simple method of procedure which would enable almost any one to conduct the same experiments.

The vote of thanks was carried unanimously, and a similar compliment to the Chairman terminated the proceedings.

January 3, 1916.

JOHN STAINER, Esq., M.A., Mus. Doc.,
VICE-PRESIDENT, IN THE CHAIR.

ON BEAUTY OF TOUCH AND TONE; AN IN-
QUIRY INTO THE PHYSIOLOGICAL AND
MECHANICAL PRINCIPLES INVOLVED IN
THEIR CULTIVATION.

By A. GALANHO STEEN, Esq.

PART I.—THE VOICE

THE subject of this paper, "Beauty of Touch and Tone," is one which however admirably it may be exemplified in the public performances of many—unhappily not all—of our leading artists, however conscientiously it may be inculcated by our most eminent teachers, is, in the playing and singing of too many of our artists, synonymous only by its absence; and I can but think that, from the generality of the members of the musical profession, it does not receive that amount of attention which its importance demands, and which the rapid extension of musical education in some other directions might lead us to expect. That during the past few years a real improvement has taken place in the attainments of both professors and amateurs is plainly evident, general culture and musical culture going hand in hand. The literary world is leavened by musical thought, and in the musical world the mere musician bids fair in a very short time to become as exact as the dodo. In theoretical knowledge, in the power of rightly appreciating the true purport of classical works, in reverence for their authors, in the facility with which he sings or plays difficult pieces at sight, in dexterity of manipulation, the musician of average ability is far, far in advance of his immediate predecessors.

It will, however, be conceded by all, save the most indulgent or the most incompetent of critics, that, both on the stage and the platform, the occasions are indeed rare when the performance is marked, in any high degree, by that perfection of execution which, although it is not the end and aim of

art, in one form or another its indispensable adjunct—ought we not rather to say the very body through which alone its spiritual and intellectual manifestations are possible? I suppose, too, that for every schoolgirl who twenty years ago could manage to stumble through the "Battle of Pagan," she might now be found who knew something about harmony and the history of music, and are credited with the ability to play a Beethoven sonata or sing the "Erl-King" by Schubert. But the playing or the singing of the typical young lady who has "finished her medical education," even in that small minority of cases in which the piece might be rendered with perfect accuracy, can scarcely be regarded, by the most tolerant of listeners, as an exhibition of "beauty of touch or tone."

Of the many different causes which work together to produce such an inadequate result for all the time, talent, and money so freely bestowed on medical education, many are evidently quite outside the scope of this paper; but one or two bearing more immediately on the subject in hand, if not fully discussed, ought at least to be emphasized here.

And, first, I would draw your attention to the too prevalent tendency to over-estimate tasteful expression, as being of far higher importance than the right method of producing tone; so that even the musical critic of the *Times*, in an operative article which appeared May 20, 1899, says that a certain singer "possesses a legitimate tenor voice of fair compass and agreeable quality, which he knows how to employ without resorting to the so-called 'travels,' often criticized as an abuse of taste, but really nothing more than a *defect of method*." Surely this is a most conspicuous doctrine, and if carried to its legitimate conclusion it must produce nothing less than a generation of art bunglers and professional dilettanti. To all holding similar views, if such there be enough as, I would respectfully submit for their most thoughtful consideration two or three sentences from Goethe's "Essay on Idleness":—"The speaking to the feelings, the last effort of all poetical organization, but which comprehends the *conscience of the whole of art*, seems to the dilettante to be the thing itself." "The dilettante," he says again, "when he has done all he can, excuses his work by saying it is not yet finished. In fact it never can be finished, because it was not properly begun." And again, more pointedly: "From handicraft the way is open to art, but not from *botchwork*."

Thus, again, those masters are so accustomed to regard music from a scientific point of view that they are in danger of forgetting that it has not yet ceased to be an art. With them, beauty of touch and tone is sacrificed to knowledge about music and the power of answering questions. I have had numbers of pupils who, when they came to me, could tell me all about the scales, chords, and cadences, but who were utterly incapable of

playing the simplest air is anything approaching to a full, free, confident, and graded tone.

But even among those masters who do recognize the importance of laying a good technical foundation, and work honestly to make their pupils really pianists and vocalists, there is such a difference of opinion as to what constitutes right method that it is pretty certain that, when circumstances render it necessary that a change of masters should be made, the poor pupil will be told that his method is altogether faulty, and that he must go over at least some portion of his work again. Thus, with some masters the piano the all-important matter is that the tip of the finger should alone touch the keys; others hold the flat of the finger, as being the more sensitive part, should be used. One trains for agility, another for smoothness, and a third for strength. One forbids his pupils even to look at an organ, while others, myself among them, contend that its practice affords a most effectual means for correcting a defective touch. Indeed, the whole time of this meeting could easily be occupied in merely enumerating these differences of opinion in regard to the piano alone, while the existing theories concerning the training of the voice are at least equally numerous. It is in the belief that, underlying all this mass of contradictions, it will be possible eventually to discover true and inflexible principles on which a perfect method of practice can be based, that I have entered on this inquiry into the physiological and mechanical principles involved in the cultivation of beauty of touch and tone. I make no claim that I am myself in possession of such an ideal method; but I trust that, by placing before you some of the extremely contradictory views current among those whose position in the profession entitles them to be listened to with respect, if not to be regarded as actual authorities, there will be elicited from the members present such results of their own thought and experience as will, at any rate, tend to the advancement of a greater consistency of opinion and practice than at present exists. I did hope that I should have been able to touch upon both vocal and instrumental music, but I find it impossible to do so without trespassing on the time allotted to the discussion which I trust will follow. I have no wish to indulge unduly in mere technicalities, but I must take for granted that my hearers are fairly acquainted with the anatomy of the vocal organs, with the theories of Helmholtz respecting the source of difference of timbre, and with the scientific distinction between vowels and consonants.

It cannot, of course, be unknown to you that there are masters, distinguished alike for their executive ability, their skill in teaching, and the perfect honesty of their convictions, who ignore, ridicule, or condemn as positively harmful, the notion that any useful purpose can be effected by the study of physiology in connection with vocal training. Thus Signer

Ferrari, although he belonged formerly to the medical profession, and strongly insisted on the danger to health which arose from a bad method of speaking and singing, did not find it necessary to explain the action of the vocal organs in his work on "The Formation and Cultivation of the Voice," contenting himself by indicating the general lines of practice in accordance with the Italian traditions, and giving some hints for the management of the mouth and breath, and for the correction of the more usual defects found in young singers; but beyond this "it must be left," he said, "to the conscientiousness of the master to correct *frequently enough* the numberless little faults which are the great drawback of singers generally."

Mr. Willys Cooper, a gentleman well known in London as an accomplished vocalist, in his pamphlet, "The Voice: the Music of Language, and the Soul of Song," a little work which has been endorsed with the approval of many of our most careful musicians, throws down the gauntlet thus: "Here it may be as well to say something about the throat and neck, and the position in which every good singer appears while singing. In doing this I shall confine myself to that which can be observed, and avoid as much as possible any remark that may be calculated to perplex; feeling assured that the singer cares little about the formation of the vocal organs, or where tone comes from, provided the listeners are pleased and the result of his singing is success."

Friedrich Wink also, in his "Piano and Singing," a book which, to those who can read between the lines, is absolutely bristled of the most valuable information and suggestions, never tires of satirising the idea that any art can accrue to the teacher from physiological and anatomical knowledge. "Three trifles are required to be a good teacher of the piano and of singing: The finest taste, the deepest feeling, and the tenderest ear."

It is self-evident, indeed, that in the early history of any art it must in all cases be imparted by the experts to their pupils in a manner wholly empirical, because art necessarily precedes a knowledge of its principles. The old Italian masters could therefore teach only by example, and according to a "ward and just feeling for the beautiful, guided by the faculty of acute observation, which enabled them to distinguish what belongs to nature;" (Sailer). But it is certain that, as the stream of scientific culture widens, the profession of teacher cannot be confined to those endowed with the three trifling qualifications prescribed by Herr Wink, and then *defect* will be added to defect until it will be impossible to say who is right and who is wrong, except by reference to scientific principles. *Anyhow*, nowadays there seems to be no likelihood of securing good results except by pursuing the scientific method to its furthest possible limits; for, whether we approve or not, the physiological

methods already in existence are legion; and since "I saw it in print" is become almost as sure a passport to belief with the many as the "It is written" of former ages, the necessity for aiming at the attainment of scientific certainty is rendered imperative for all teachers whose object is the advancement of their art rather than the accumulation of filthy lucre.

As a wholly indispensable preliminary to the production of any tone whatever, whether good or bad, we must be supplied with breath. And here, at the very outset of our inquiry, we are met by differences of opinion as to the best manner of taking it. Thus many distinguished physicians, arguing chiefly, if not solely, in the interests of health, advise always to inhale through the nostrils. Professor Plympton, in like manner, recommends this plan as being conducive to the cultivation of the voice, and he relates how that a certain Mr. Dexter, a teacher of elocution, used to impart this as the great secret of success in speaking, demanding a heavy fee for it, and requiring a pledge that it should never be revealed; and if the pupil was in holy orders he was further required "to sign a bond, that in the event of his ever becoming a bishop he should pay a farther fee of a hundred guinea." "Take this as a golden rule," says the Professor, "that the breath should, not merely when reading, though thus I hold it indispensable, but at all times and under all circumstances be taken into the lungs only through the nose." While, on the other hand, Signer Randegger says, in his "Primer of Singing": "The air must be received into the lungs through the mouth, which must be slightly opened so as to prevent it from entering through the nostrils." But it seems to me that, as rigidity and perfect suppleness in inspiration are indispensable when singing, it would be best performed by freely opening both passages. The danger pointed out by the advocates of nasal inhalation alone, that cold air drawn in rapidly through the mouth might cause inflammation of the pharynx, would be averted by the current descending from the nasal passages, which would prevent that entering through the mouth from striking against the back of the throat at all. For every other purpose than that of vocalization, I should say that the breath ought to be drawn exclusively through the nostrils.

With regard to the muscles involved in the act of inspiration, it seems now to be very generally held that it should be effected through the co-operation of the diaphragm with the intercostal muscles. I was, however, much struck by a statement made at a former Meeting of this Association, by the most celebrated lady vocalist of modern times, that she had always raised her shoulders in taking breath when singing; and the President of the Meeting, himself a vocalist of eminence, added that he always found that his lady pupils required, at any rate occasionally, the assistance of that movement. Those who oppose this

method seem to me to misadvertized the position, for although it is quite true that by diaphragm breathing alone it is impossible to inhale anything like as much air as by the united action of the diaphragm and the muscles of the ribs, still any one may prove for himself that when as much breath as can be taken by those means has been inhaled, some fifteen or twenty inches in addition can be obtained by the elevation of the shoulders, which Dr. Gordon Holmes regards "as a kind of respiratory reserve, which nature presses into service if at any time an extraordinary effort of breathing be demanded." And in some directions which he has given for the practice of respiratory gymnastics he says: "As a rule the exercise should be restricted to abdominal and costal breathing, but an occasional diaphragm inspiration in its proper place may be allowed, in order that the pupil, by being accustomed to the highest limit of chest expansion, may be enabled to practise the intermediate movements with more facility." He also recommends an occasional "retention of the breath, by fixing the chest walls after a moderate inspiration by the power of the inspiratory muscles, whilst the glottis remains quite open."

However the inspiration is managed, it is of the utmost importance that, the breath once taken, the singer should obtain complete control over its emission. This is generally regarded as a holding of the breath like that just alluded to, in which the inspiratory muscles are used to counteract the automatic force of those appertaining to expiration, while the glottis should take little, if any, share in the work. Thus, Mr. George B. Root (as quoted in Mr. Curwen's "Teacher's Manual") says— "When the lungs are full you can stop the breath by shutting the throat, at the same time relaxing or letting go, as it were, the intercostal and abdominal muscles. This is useful, for it compels the delicate organs of the throat to bear an undue pressure, and leaves the great strong muscles, which should do the work, in idleness. When the lungs are full the will should, as it were, keep hold of the abdominal muscles, and by acting upon them gradually be gradual breathing, and suddenly for sudden breathing, leave the throat with only its proper work to do, *viz.*— quickly open during the operation of breathing, the vocal cords drawn early together during the production of tone, and the windpipe acting freely and flexibly in its lengthening and shortening for difference in highness and lowness of sound. This is the delicate work of the throat. With the rough work of forcing the breath, or holding it back, or in any way contracting it, the throat should have nothing to do. That is the office of the intercostal and abdominal muscles." This method, which is well-nigh universally recommended, although not so generally adopted in actual singing as is usually supposed, is very fatiguing, and it has consequently been termed by a French author (Dr. Louis Maudsl, in his "*Hygiène de la Voix*") "the

vocal straggle" (in *forte vocis*). Signor Randegger, in like manner (in his "Primer of Singing"), directs that "the vocal diaphragm will gain be enforced in order to resist the natural tendency of the air to escape."

The idea that shutting the throat, in order to control the emission of the breath, is fruitful, arose, in all probability, from the belief that it was performed solely by the straining together of the vocal cords by the action of the intrinsic muscles of the larynx; and if this were the only means of closing it the practice would obviously be extremely injurious, for it is admitted by the most eminent physiologists that they are not strong enough for that purpose, when the full power of the respiratory muscles is exerted either in inspiration or expiration. This matter is fully explained in a paper by Dr. Wylie, entitled "Observations on the Physiology of the Larynx" (published in the *Edinburgh Medical Journal*, vol. xii., 1856), for which a gold medal was awarded by the University of Edinburgh. He says: "Now it must be borne in mind that by closure of the glottis complete stoppage is effected not only of inspiration but of expiration, the most powerful efforts at either being rendered quite ineffectual. This is, no doubt, in a great measure due to the action of those intrinsic muscles of the larynx which close the rima, but the strength of these comparatively minute structures is surely in itself inadequate to resist the enormous power which the air may be made to exert upon the glottis from within during a forcible attempt at expiration, as well as its pressure from without when we try to inspire. From this consideration one is naturally led to suspect the existence in the glottis of some well-adapted valvular arrangement, suited to control both the entrance and exit of the air." With the view of ascertaining whether this were the case or not, Dr. Wylie made some very interesting experiments upon the detached human larynx, and found that by merely approximating the edges of the false vocal cords and forcing a strong current of air through the windpipe, the ventricles of Morgagni were filled with the air, which caused them to bulge forwards and upwards, and their lips to press so closely together that all exit of the air through the larynx towards the mouth was totally stopped. By reversing the experiment and forcing air downwards, as during inspiration, the true cords were similarly acted upon, thus preventing the passage of the air towards the lungs. "The conclusion," says Dr. Wylie, "to be derived from these experiments is obvious. There is within the larynx a double valve, which is capable of controlling both the exit and the entrance of air. . . . A laryngoscopic examination" (on the living subject) "fully confirms the view which I have just stated. The following phenomenon may then be observed:—

"First, When the glottis is simply closed, and no effort is made either to take in breath or to expire, the false cords are

separated by a very narrow interval, through which the edges of the true vocal ligaments may be seen in close apposition.

"Second, When an effort is made to inspire, the superior cords meet in the middle line so as to leave only a very small triangular opening posteriorly, through which there still may be caught a glimmering of the pale surface of the true ligaments.

"Third, When expiration is attempted, the false cords are immediately conaped throughout their whole length, and if the effort made be powerful the parts above are observed to arch or curve outwards without allowing the air to escape (Germak). This swelling out of the mucous membrane at the upper part of the larynx can be due to nothing but the inflation of the ventricles of Morgagni beneath."

It would appear, then, from this discovery of the beautiful apparatus furnished by nature for the control of the emission of the breath, that it cannot be harmful to close the throat in order to hold the breath, and the exertion involved in the "vocal content" is thus shown to be altogether superfluous.

Any one can prove for himself the ease with which breath can be controlled by this mechanism, for by simply filling the lungs and holding the breath, that is, by approximating the false cords, he will find that he can with the greatest ease maintain a whispered expiration for as long a time, or very nearly so, as he could during actual singing. And as long as the pressure is maintained below, the slightest act of volition will interrupt the current and hermetically close the throat, which can be again and again opened and closed. This alternate opening and closing can be performed with considerable rapidity, a dry explosive sound accompanying each emission of breath.

Having obtained, by one means or another, a supply of air and a control over its expiration, we must now endeavor to ascertain in what manner we may best apply it to the production of vocal sounds. The problem is really twofold—Firstly, to determine wherein rightly produced tones differ from those which are wrongly produced; and, secondly, to discover the means by which the right method of their production may be brought under the direct control of the will. And here the various methods advocated by rival theorists are indeed legion, the ideas upon which they are based being, in some cases, derived from the nearly personal production of the writer for some particular quality of tone; in others, from a forced resemblance in the action of the vocal apparatus to one or other class of humanly constructed musical instruments. In only a very small minority of those who have written on the subject do we find that an unprejudiced and really scientific mode of investigation has been pursued, and even those have for the most part arrived at very one-sided conclusions, in consequence of their ignorance of the discoveries of their fellow workers.

To give even a bare outline of all these conflicting theories is manifestly impossible in a paper of reasonable limits, but I have tried to select those which present the widest contrasts, or whose authors are, by their prominence in the musical world, the most powerful in their influence on the current of contemporary opinion.

In but one work do I remember to have seen any idea expressed that some persons are so constituted that, although they are neither deaf nor dumb, even rightly directed practice, however earnestly pursued, must necessarily fail to enable them to sing. Miss Sabella Novella, in her treat "Voice and Vocal Art," says: "The most careful anatomists have failed in discovering any material difference between the mechanism of throats capable of musical cultivation and those unfitted for song. Sound is merely produced by a current of air passing from the lungs through the larynx and glottis, which, vibrating at its thin edges or lips, creates musical tones, heightened and lowered at will by the contraction of certain ligaments and muscles. Thus it would appear that every human being possesses the power necessary to sing, but experience proves the contrary, and this fact must ever remain an enigma to those who endeavor to analyze the human voice."

Mr. Frank Ramer, in his "School of Singing" and his "Physiology of the Voice," professedly bases his method on Sarsen's experiments with flexible tubes, but he is evidently much influenced by a personal objection to anything approaching to roughness of tone. "The human voice," he says, "has two distinct methods of producing tone, one method by expanding and inflating the tube, the other by contracting the tube at certain points." He considers that the sounds of the speaking voice are produced by contraction of the throat, while in singing the tones are produced in the windpipe. "It naturally will be asked why nature has given us two methods of producing the tones of the voice, one so good, the other so bad. The reason is simple. We have two distinctly opposite feelings to express in the world—our likings and our dislikes—of things with us and things against us. These two conditions of sound in the human voice may be said to be infinite in their varieties and intensities. . . . In fact, I believe it to be one of the laws of nature, that all sounds generated by a pure column of air are pleasant to our nervous system, while sounds produced on the system of a reed, or by friction or contraction, are unpleasant and even painful to persons with delicate nerves. A sound produced by the fling of a saw will produce this result. I am aware that sounds are produced in many different instruments by a combination of these two methods; but, upon minute examination, it will be found that the tones of such instruments are only pleasant to the ear when the vibrations produced by the reed are neutralised by

the more powerful vibrations of the column of air. For instance, the violin produces its tones by a string vibrating a column of air around it. But the method of first setting a string in motion is by contraction or friction; consequently its sounds are unpleasant until the performer gains delicacy with the bow, in making the string vibrate as independently as possible of the frictional action. It is exactly the same with the clarinet: a good tone depends upon the delicacy of the action of the reed in maintaining the tube in a state of vibration. From these observations, by analogy of musical instruments, it will be seen that whenever the reed overpowers the tube a bad quality of sound must be the result."

As a consequence of these premises Mr. Romer's directions are: "It must be distinctly understood that the throat has nothing to do in the situation of the ascending or descending notes, when the tones are produced naturally, but that the different scales and intervals are formed by the free action of the diaphragm on the column of air, and if we have recourse to any modification or contraction in the throat, our intonation will become uncertain, and we shall ultimately lose all power over the musical quality of tone." The pupil's attention, in order to obtain a right control over tone, is to be fixed on the sensations caused by the ascent and descent of the diaphragm; thus, "when the voice descends the scale, a sinking sensation must be experienced at the chest."

Mr. George J. Lee, who in the year 1870 published at Dublin a work entitled "The Voice: Its Artistic Production, Development, and Preservation," attempts to prove that the vocal organs, throughout their entire compass, act on the principle of the flute, and claims the discovery as his own. In support of his "correct theory of voice" he says that the windpipe simply conveys breath to the larynx, in which the sound is generated, and thence driven by the direction of the wind into the pharynx; "that, as a consequence, and according to all principles of acoustics, this portion of the tube—the pharynx—must, by its shape and dimensions, modify sound; and that it does undergo great changes in its shape and dimensions, by reason of the fact that the larynx runs into it and descends out of it, thereby lengthening it and shortening it during the ascent and descent of the notes of any scale, that since we notice that this tube alters its dimensions during the production of notes of different pitch, and that at the same time the vocal ligaments undergo no appreciable change in length or curvature save upon a change into a different register" (on this point he quotes the authority of Cuvier), "it must be to the alterations in this tube that pitch of voice is due, and not to any change in the vocal ligaments. Lastly, that the action of the ligaments is similar to that of the lips, since viewed with the laryngoscope during the emission of vocal sound, they are

ness to form themselves around the aperture for wind, with thick rounded edges and pined outwards, as are the lips during the production of notes on the flute.² He, moreover, holds that in gliding from one note to another a sensitive organ there is a slight modification of the glottis, in the same way as in the lips of the flautist, who, while he alters the length of the tube for diametrically different notes, "only extends or contracts his lips" for the intermediate class of a semitone.

In reply to those who would argue that in many voices the vocal ligaments are shortened and lengthened, are tightened and relaxed for altering the pitch, he says that in "that case nature acts vicariously. The duty of the pipe man, to a great extent, is thrown on the vocal ligaments, but only by a forced and unnatural action, which, however successful for a time, cannot last; it must end in bankruptcy of voice."

As to the practical value of his discovery, he claims that the cultivation of the voice on the principle of springs involves undue tension, and on the *read theory* it necessitates great effort: in both cases wearing out the voice prematurely, besides inducing a bad quality of tone, whereas, "viewing the vocal organ as a flute instrument, a very different result takes place. First, the voice is developed by following up and encouraging the natural action of the instrument, as seen in the ascent and descent of the larynx, and the other changes in the apparatus generally. There is no effort used, and as a consequence there is no fatigue; there is no straining of parts, and therefore there is no lesion or diseased result; there is no strain or red descent of, and consequently there is no quality of tone sought for, but the soft, liquid, and melodiously clear tone of the flute."

Concerning method of study he says: "Some teachers direct their pupils to control the movement of the larynx so as to prevent it as much as possible ascending or descending for the production of sounds. With them, fixity of larynx is the great object to be gained, and hence they go on producing voice by straining at the vocal ligaments, and wearing out the instrument by the quickest possible plan. Such a system should be carefully guarded against. The natural action alone is that which should be sought for; and the only control to be exercised is that which is requisite to steady the larynx during the production of any one tone."

He directs pupils to vocalise exclusively on *oh* or *ay*, and says that "the injurious method usually adopted by singing *ah* not only induces an unpleasant quality of tone, but establishes a hoarse or tightened condition of the organs highly detrimental to their proper or healthy action."

One hint which he gives, for the comfort of those who suffer from dryness of the mouth when singing, is so rich that I really must not omit it. The presence of saliva is "essential to the movements of the tongue, pharynx, and mouth generally, from

its lubricating qualities. The Italians, who speak with a large quantity of *l* about the tongue and teeth, give that liquid character to their language which, together with the softness of the vocal sounds, renders it the sweetest and most musical in the world." Mr. Lee, having found that white solids introduced into the mouth encourage the flow of saliva, liquids do not, was led "to conclude that the introduction of some tramped and solid foreign body whilst singing would be productive of the desired result, and found that a small flat piece of slate-pencil, placed inside the lower jaw, accomplished the required condition. The sympathy existing between the word and the salivary glands is certainly not less than that existing between mind and any other portion of the human organism. And in this sympathy lies the secret of the man's almost marvellous power over every portion of our frame. In the point before us, its immediate operations would be, by some rapid association, to train the glands to fresh productions of the fluid. The great object, however, should be to dispense with all artificial stimuli except in cases where, without their use, the dryness of the mouth would offer an obstacle to vocalisation, and this object is to be brought about through the mind."

Another instrumental theory of the vocal mechanism on which a method of teaching has been based is that promulgated by Ferrein, who originated the term "vocal cords," and believed that their action was analogous to that of the strings of a violin, and that they were set in motion by a stream of air acting like a bow, the difference in pitch being caused solely by the alteration of their tension. I think that it must have been in consequence of some such a theory as this that Mr. Curwen, in one of his early works ("Singing for Schools and Congregations"), directed his readers "to let the larynx rise for the production of low notes, and fall for the high notes", while the sound common sense which, among many admirable qualities, has ever been a leading characteristic of his teaching, dictated the last note—"secure the open air, and you need not think about the larynx."

It is, indeed, perfectly true that in ascending passages the front of the thyroid cartilage does rise and more approximate itself to the cricoid cartilage immediately beneath it, but the most cursory observation will prove that the larynx, as a whole, rises for high sounds and falls for low ones. And it is therefore unfortunate that in Professor Huxley's generally so admirable "Manual of Elementary Physiology," in the explanation of a diagram illustrating the mechanism of the vocal organs, no notice is taken of this ascent and descent of the whole larynx for sounds of different pitch, but it is made to appear as if Mr. Curwen's instructions, above quoted, were really correct.

In Professor Huxley's works on voice culture, which are founded mainly on Professor Willis's papers in the "Cambridge

Philosophical Transactions," he says: "From the difficulty and till lately the impossibility of watching it in the living subject, the action of the larynx in the production of sound is still imperfectly understood. Nor does that which is certainly known about it encourage us to hope that the extended knowledge would enable the will to act more directly upon it than it does at present"; and, quoting from Willis, he adds: "There is no necessity for making any pretence of affixing the quality of the notes to the larynx itself." He, therefore, consistently devotes his attention to the alterations in tone which take place in the upper laryngeal organs, and ignores everything which tends to concentrate the pupil's attention upon the larynx itself during vocalisation. He recommends the vowel *ah* as the best one to use for the first exercises, justifying his choice by citing Willis's discoveries concerning the scale of vowels, which, he says, indicates the order in which they should be attempted. "He should begin with *ah* and often return to the practice of *ah*, begin with it because it is the easiest, and return to it because experience has shown it to be the most useful. The practice of *ah* had best be followed by that of *a*, and that of *o* by that of *u*; so had better come next, and *e*, incomparably the most difficult, last."

Mr. Wilbye Cooper, in his pamphlet already alluded to, commences by drawing attention to the distinction (too often overlooked by the public) between a good voice and a good singer. He says: "The quality of sound which is most charming to the listener is that which is most devoid of a ready character. Readiness of tone may be described as that which is somewhat akin to the notes we are able to produce with a comb and paper. Purity of tone is undoubtedly that which is round, liquid, smooth, and mellow. To be the best possible singer, one should undoubtedly possess the best voice possible, and the highest amount of musical and poetical intelligence with it; but a really fine singer might possess only an ordinary voice, and a really fine voice might be almost lost from want of musical feeling in its possessor. The difference, then, between a good voice and a good singer is the difference between sound and sense." He then proceeds "to show how the one may be improved, and the other, in a degree, cultivated." He bases his method of teaching entirely upon the cultivation of the organs of speech, and his directions are devoted to external matters entirely: "Directly a singer, who produces the voice properly, takes up a position to sing, the back part of the head is raised, the chin is kept down, the throat is not bent, the back of the neck is made as straight as possible, and the whole body is made to assume an upright posture, the lips and mouth are opened naturally, never wider than the character of the sound of each word demands. By these means it is evident that the throat is brought into its

most open form, and the voice is given a free space from the chest into the hollow of the mouth (or ball of the instrument). In this position the voice makes no guttural noise, and in this position must the voice of the singer be produced before it is possible to decide upon its real quality. The utter force of opening the mouth as wide as possible, and singing every note and passage to the open sound of the letter *a*, is too proper to bear a moment's reflection, except that plan be adopted as the shortest way to ruin." I must remark here that although I have had many pupils who have told me that their former instructors had directed them to open their mouths as wide as possible, I do not remember to have seen it recommended in any work whatever. Mr. Cooper continues: "The unnatural noises, which are too frequently made to serve for voice, are produced by reversing the order of things. Thus, it will be found by raising the chin, and at the same time lowering the back of the head towards the shoulders, the throat is closed, the chest voice is entirely preserved or cut off, and the noise produced seems to issue from the back of the tongue, giving the idea of half-strangulation. It is impossible for those who pretend to sing in this manner to utter pure vocal sound or to give the true character to words. They seem to be continually striving to introduce the letter *r* into every word they meet with, and so contrive to produce a kind of false noise upon almost all vowels. The result of close observation will prove that pure vocal sound issues freely from the chest and requires a clear passage, and that character is given to it by the mouth and lips in declaiming words. The tongue, having no part to perform except that of assisting the lips to articulate, should remain flat in the mouth, and never be allowed to move. The chin should never be raised, nor should it ever be allowed to vibrate in the slightest degree while singing a number of notes to one word. The mouth having no important part to perform, the singer must not for a moment imagine that the face can be kept constantly in the smiling position, so generally recommended in singing tuition. There are certain words that cannot be properly sung except the mouth assume a smiling position; but there are others that cannot be sung at all if the singer attempt to smile at the same time." In these directions there is but little that can be considered as tending to improve the voice, the assumption being rather that there is no improvement necessary, the pupil only requiring to avoid bad habits; and this idea is strengthened by his remarks on vocalisation. "Sounds," he says, "are represented in language by words; the art of vocalising, therefore, must consist in the ability to sustain any vowel sound upon any given note, or to repeat several notes upon any given vowel-sound. It is, then, of the greatest importance that a right conception of the free sound of each vowel should be arrived

at. It must be borne in mind that the voice cannot be sustained upon more than one at a time, and that consonants form no part in a vowel sound. The safest mode to adopt . . . is to take the accepted sound as described in the dictionaries, and then to adhere strictly to it. If these remarks are thought over and put in practice by any one having a correct ear for sound, I am quite certain that real harshness cannot appear at the same time even in the most ordinary voice, for the simple reason that no vowel has a harsh sound of itself."

His first exercise is to sing a simple melody, using instead of words the vowels a, e, i, o, u, according to their usual names. After this words are to be used, taking care that the consonants are to be considered as articulations only, and must not be dwelt upon in the least degree. "To try to make a sound upon a consonant is simply absurd; yet it is so much the custom to mix up vowel sounds with consonant articulations, that nine-tenths of those who try to speak or sing, utter noises upon certain words that may well be described as un-sensibly; appearing to issue at one time from the nose, at another from the back of the tongue, at another from the top of the throat with the tongue curled up—the latter approaching nearer the croaking of a frog than the natural voice of any human being." Mr Cooper is justifiably severe on those popular singers—he will not call them artists—who valuably display their ignorance of the first principles of vocalization by murthering the Queen's English, but, indeed, with him the pronunciation is everything. "Thus," he says, "it will be seen that language (if not the rest of song) gives character to the sounds that a speaker or a singer should produce, and musical notation the pitch; and whether the musical notes be written high or low, the character of the sounds must be taken from the words." Nowhere in this book have I found any instructions for determining the ready character from a voice, or for judging that "purity of tone" which "is undoubtedly round, liquid, smooth, and mellow"; nothing beyond the repeated assertion that "when any given note or passage receives the pure vocal sound of the word written under it, the voice of the singer cannot be at the same moment disagreeable, for the reason before stated, 'that no vowel, or vowel, represents a harsh sound.'"

In concluding these extracts from Mr. Cooper's book, we should, I think, commend his patriotic admiration of the sounds of his native tongue, and the practical though unobtrusive reproach he gives to those who, even now, talk so glibly about the universal character of our beautiful language. But, considering the light which, by Mr. Ellis and others, has been thrown on the infinite variety which exists in the shades of vowel tone, and the modifications in which they must be subjected when sung at different altitudes of the vocal com-

pass, I cannot but regret that he did not advise his readers to consult some more reliable authority on the true mode of their pronunciation than an ordinary dictionary. And as to his theory of their necessarily pleasing character, a short extract from Professor Willis's paper on "Vowel Sounds" (*Cambridge Philosophical Transactions*) will sufficiently expose the fallacy of his views: "Vowels are quite a different affluence of sound from both pitch and quality. Thus we say a man has a clear voice, a nasal voice, a thick voice, and yet his vowels are quite distinct from each other. Even a parrot, or Mr. Parrot, in speaking will produce *a's*, and *e's*, and *i's*, which are quite different in their quality from human vowels, but which are nevertheless distinctly *a's*, and *e's*, and *i's*."

Signer Furini takes a very different view from that of Mr. Wilbye Cooper, and attributes the bad tone of English singers especially to the modified way in which they speak, by which the natural tone of their voices is disguised and spoiled. "The only difference," he says, "between speaking and singing is, that in speaking we strike the sound impulsively and immediately leave it, whereas in singing we have to sustain the sound with the same form of articulation with which we struck it impulsively. Little or no attention is paid to the tone in which children speak, consequently they often contract bad habits of intonation from the earliest age, and as they grow up what is mere habitual tone is mistaken for the natural voice. The young ladies of the present day 'speak' in a subdued, modified tone, or what might be called a *scraffalotto*, in consequence of which very few natural voices are heard. Possengers generally speak in the natural tone of their voices." I am inclined to think that our national tone is not the result of a lazy way of speaking alone, an outcome of our indemonstrative character, but that the climate has something to do with it, its humidity and variableness tending to make us speak with our mouths nearly closed. Another view of this question will be presented later. Furini insists upon the necessity of vocalising open *ah*, and says that a pupil can generally find out the true way of producing tone by being made to read "in a deep tone, as though in earnest conversation, beginning two or three notes below what they consider their lowest notes. But when a young lady, who has been in the habit of speaking in this modified tone, is shown what her real voice is, instead of being gratified at possessing a fine organisation for singing she is generally annoyed, the fairness of the tone being offensive to her ear, and very frequently will not for a long time sing in her natural voice, but continue to use the habitual tone. The result is that not only does she never sing well, but soon begins to sing out of tune, and finally loses her voice, and in too many instances materially injures

the chest. Indeed, I have no hesitation in saying that hundreds of young ladies bring upon themselves various chest affections from a bad method of speaking or singing. Singing in classes and practising songs or solfeggi with fixed passages, before the voice (by which I mean the natural production of tone) is cultivated, are two fatal errors. Another general error in the commencement of singing is to make the pupil begin the sound *staccato* and make a crescendo upon it. This causes the pupil to force the breath and thrust it forward, veiling the sound and causing the chest to collapse. By pursuing such a method the voice, instead of developing, becomes weak and husky, and the pupil never obtains sufficient command of the breath to be able to sustain a sound, even after years of practice. There is no doubt that, provided the *tono* be produced according to the principles laid down by nature, singing tends materially to the healthy action of the respiratory organs, and might frequently be employed with advantage as an aid to strengthen them."

It will be observed that, admirable as are these remarks, Signor Ferrari does not attempt to show in what way "tone produced according to the principles laid down by nature" differs from that which, in the mode of its production, violates these principles.

Very different in every way, and certainly much more scientific, is the method adopted, in his "*New Treatise on the Art of Singing*," by the distinguished inventor of the laryngoscope, Señor Manuel Garcia, whose name marks an epoch in the annals of vocal physiology. However earnestly and successfully later workers may have laboured in the same sphere, it is directly or indirectly, to his observations that we are indebted for the establishment of what I may, perhaps, characterize as the orthodox theory of voice production. In this the vocal mechanism is regarded as corresponding, in the main, with that of an instrument with a double reed, in which the pitch of the sounds is caused by the length and tension of the vocal ligaments, and is also influenced by the greater or less pressure of the air by which they are set in motion; difference in timbre being partly due to the greater or less approximation of the lips of the glottis, and to whether the whole bulk of the cords, or only their free edges, are caused to vibrate; but chiefly to the proportion in which the various partial-tones are reinforced by the resonance of the variable cavities through which they pass to the outer air, and of other parts of the larynx contiguous to the vocal apparatus. It is true that Garcia's explanation of the register (which, however, need not be discussed now) has met with much opposition. Indeed, in its entirety, it does not command itself to men; and the central point of his system of practice—the shock of the glottis—has been subjected to much misconception and

perverſion, chiefly, as I ſuppoſe, becauſe, when he wrote, the functions of the ventricles of Morgagni were wholly unknown, but the diſtinctions given by him for the cultivation of tone are very minute, and their importance will juſtify the very copious quotations I am about to make from them.

For the production of vocal tone, he ſays: "It is not neceſſary that the glottis ſhould be perfectly cloſed after each partial opening; all that is needed is an opening ſufficiently ſmall to develop the eluſticity of the air oppoſed to it. The ruſh of air, however, that is eſcaping through the half-open ceſſis will be quite perceptible, and will give the ſound a veiled character, at times extremely ſoft. We may therefore conclude that brilliancy of voice results from the entire cloſing of the glottis after each beat. Economy of the breath is another advantage derived from this complete cloſing of the glottis." Brilliancy of ſpeech is alſo cauſed by the larynx aſſuming a high poſition in the throat, and riſing towards the ſoft palate, the latter dropping to meet it, thus cauſing a gentle curve in the vocal tube; while when the larynx is low and the palate high, the tube is lengthened and the angle which the vibrations meet part becomes nearly a right angle, and a ſomber character is imparted to the ſound. After pointing out how erroneous is the idea "that the more we open our mouth, the more ſoftly and powerfully can ſounds be emitted," he ſays: "To open the mouth, the lower jaw ſhould fall by its own weight, while the corners of the lips reſt ſlightly. This movement, which keeps the lips gently preſſed againſt the teeth, opens the mouth in juſt proportions, and gives it an agreeable form. The tongue ſhould be looſe and motionleſs, without any attempt to raiſe it at either extremity; the muſcles of the throat ſhould be relaxed. In this poſition breathe ſlowly and long. After being thus prepared, without ſtiffening either the larynx or any other part of the body, calmly and with eaſe attack the tone very ſoftly by a ſlight motion of the glottis on the vowel *a*, very clear; this motion of the glottis is to be prepared by cloſing *e*, which momentarily arreſts and accumulates the air in this paſſage; then, as ſuddenly as the pulling of a trigger, it muſt be opened by a loud and vigorous ſhock, like the action of the lips energetically pronouncing the letter *p*. If this movement be properly executed, the ſound will come out bright and round. Care, however, muſt be taken to pitch the ſound at once on the note itſelf, and not to ſtir up *is* it, or feel for it. The pupil muſt alſo be warned againſt conſounding the articulation or ſtroke of the glottis with the ſtroke of the cheſt, which laſter reſembles the act of coughing, or the effort made in expelling ſome obſtruction from the throat. This ſtroke, or coughing on the notes of the cheſt, cauſes a great loſs of breath, rendering the ſounds agitated ſtrid.

and uncertain in tone. Some masters recommended the use of the syllables *pa, la, ma, &c.*, in order to acquire precision in striking the notes; but in our opinion this plan (by which the lips, tongue, and other organs not concerned in the emission of voice, are set in motion) has the disadvantages of merely disguising the faulty articulation of the glottis, without possessing any power whatever of correcting it. The first lesson should be insisted on, as it is the basis of all teaching. I again recommend the shock of the glottis as the only means of attaining the sounds purely and without heaving."

He affirms that the upper glottis, *i. e.*, the space between the so-called *blau carda, never closes*, its function being "to circumscribe an elliptical space immediately above the lower lips, contracting and enlarging it, so that, at will, the volume and quality of the voice may be constantly modified." So far, however, as I am acquainted with his works, I have seen no directions for rendering this upper glottis amenable to volition.

"Unchangeable firmness, purity of sound, and perfect harmony of the timbre, constitute steadiness of voice. A well-sustained play of the respiratory organ, a firm contraction of the glottis, a free movement of the pharynx (mechanical acts that should be quite independent of each other, yet regulated in their combined action by the requirements of the passage), constitute those mechanical means by which steadiness of voice can be attained."

Garcia attributes much importance to the proper adjustment of the pressure of the breath to the tension of the vocal cords. "During pianissimo practice the pharynx will be reduced to its smallest dimensions, and will dilate in proportion to the increasing intensity of sounds; returning afterwards by degrees to its original shape, as the sound becomes weaker. Care must be taken neither to raise nor lower the intonation while strengthening or diminishing the notes. These are very general hints; and in order to overcome them pupils must carefully study the system of compensation which we are now about to explain. In whatever position a singer may have his vocal tendons placed, if he proceed to expel air with increasing force and vigour, the notes, in spite of himself, will rise, because the increasing pressure of air increases the tension of the vocal tendons, thus causing more rapid beats and explosions. This fact may be easily ascertained if, during the emission of a note, a slight blow be given to the region of the stomach. The effect will be to raise the voice a second, a third, or even more than that, and the alteration resulting from the pressure ceases as soon as the latter is removed. Hence, in order to produce perfect uniformity of intonation from pianissimo to fortissimo, it is necessary that the vocal ligaments should, by a gradual slackening, counter that tendency of the tone to rise above its proper pitch—the exact

opposite being the plan pursued in returning from fortissimo to pianissimo." In consequence of the difficulty of this adjustment, the practice of the *overblow* and *diminution*, which some writers have regarded as the very first step to be taken, must be put off till the pupil has acquired the power of sustaining sounds with perfect evenness at every degree of intensity.

The difference with which the "click of the glottis" is regarded by many teachers arises, in my opinion, from the idea that it involves a general tightening and straining of the throat, and must therefore tend to the injury of the vocal organs. Garcia does indeed insist, over and over again, on the necessity for the lips of the glottis to press firmly against each other (in one place, if I remember rightly, he even says they must be "pushed together"); but he takes care to urge with equal force the importance of perfect freedom and flexibility of every other part of the throat and mouth. Among other objections, Dr. Sweetser (in his "Voice Building"), whose infallible recipe for good tone is that the focus of the vibrations should be located in the arch of the mouth, evidently misunderstands the question. He says, "in some cases the tone hits or clicks against the throat, and below its true point. It rebounds from this position to some indefinite one, and the result is that the language is not understood, the intonation is false, the quality of the tone suffers, and the throat is in many cases seriously injured. The same means used to correct other defects will surely remedy this. Articulate the notes, and do not attempt to squeeze them indefinitely through the mouth. Let the articulation of the language and the location of the tone be simultaneous. The click just described is an interruption of those movements which produce sound. No defect is more general; none, perhaps, more injurious. Throats are debilitated by it, and it is impossible for it to be otherwise, as it is produced by a violation of those laws of movement necessary for the healthful development of the vocal apparatus. Would it seem possible that educators in the department of voice should advocate the use of an exercise which is a direct violation of these laws? Yet such is the fact, and this click, their so-called 'strike of the glottis,' is insisted upon as a desirable exercise for the development of voice. We pronounce it wholly incorrect and injurious." I think we must agree with Dr. Sweetser, that if his account of the shock of the glottis be correct, its use is utterly reprehensible.

Mr. Curwen, too, although (in his "Standard Course") he places the shock of the glottis first among the three things to which "daily attention must be directed," has, I think, mistaken its nature. "When Garcia and other voice-writers speak of the 'shock of the glottis,' and when Dr. Rush,

Mr. Melville Hall, and other elocutionists speak of clear 'explosion' of vowel sounds, they refer to the firm closing, followed by the distinct opening, of these lips of the larynx. The action of the lips of the mouth in pronouncing strongly the letter *p*, in *papa*, will illustrate this; and the 'shock of the glottis' may be felt in a slight cough, or in pronouncing clearly the letter *g*, as in *game*, or *k*, as in *keep*. This 'shock' does not require force, but only definiteness of action. It must also be delivered with as little break as possible. The word *strides* (as an in father), which many voice-trainers use for their exercises, has this advantage, that its first syllable necessitates that clearly marked 'explosion' of the vowel of which we speak; but in using it the *r* must be scarcely heard, and the *s* must be delivered sharply." When we consider how strongly Garcia objects to the use of consonants in singing exercises, it becomes evident that Mr. Curwen's teaching concerning the "shock of the glottis" differs very widely from that of the originator of the term.

It has been reserved for Mr. Charles Loom (in a series of papers published in the *Overland*, and in his "Philosophy of Voice") to explain the true nature of the explosion which Garcia denounces, but of which he has given a description that is physiologically incorrect; and also to show why, when it is habitually practised, it exerts so beneficial an influence in the development of the voice. The principles laid down by Mr. Loom are avowedly formed upon the discoveries of Dr. Wythe, to which I alluded when speaking of the means by which the emission of the breath is controlled. I regret that I have found it quite impossible to do justice to his views by means of quotations from his works, and I must therefore venture, as briefly as possible, to present in my own words what I conceive to be their most important features. I must ask you to remember that the lips of the ventricles are placed immediately above the true cords, and that the vibrations of the latter are to be regarded as forming the raw material, if I may so express it, which, by the modifications that it undergoes in its passage through the mouth, becomes converted into speech or song. It must then appear but reasonable that if we can, by any means, secure the perfect production of this raw material, we should send ourselves off in the very first stage of vocal training; the problem being to find out how its source may be placed under the direct control of the will. This is effected by the same mechanism which was found so easily to govern the breath during simple expiration. The lungs being filled with air, and the edges of the false cords being brought into contact by a simple act of will—by merely ceasing the breath, in fact—the automatic action of the expiratory muscles causes a complete indiction of the ventricles, their lips being forced more tightly together

by the pressure of the air within. If at this moment we will that the imprisoned air shall escape, it will do so with an explosive noise similar in effect to an unvoiced consonant. For my own part, indeed, I consider it to be actually a *laryngeal* consonant. But if, before allowing this escape of breath, the true vocal cords are approximated sufficiently to be thrown into vibration, the compression of the air in the ventricles, causing, as it must, a downward pressure on the flat upper surface of the vocal cords, intensifies and steadies their action, and, on the emission of the breath, the resulting vowel sound will be clear and ringing. As long, too, as the pressure from below is maintained with unvarying force, so will this sound be maintained with unvarying power. It is this downward pressure of the air in the ventricles upon the upper surface of the vocal cords which insures that steadiness which is one distinguishing characteristic of rightly produced vocal tone. This tone, however, will not be necessarily beautiful, although so far as it depends on the action of the larynx it may be quite rightly produced, since, as you must all know, the lumen of the voice is subject to great modification on its passage through the super-laryngeal cavities. But whatever other qualities it may have, it will most certainly possess a firmness of texture unattainable by any other means, and its emission will cause no strain on the vocal cords, or undue exertion of any kind. If, on the contrary, this inflation does not take place, it is evident that the vocal cords themselves, or the very slight muscles which regulate their tension, will have to bear all the pressure of the air by which they are caused to vibrate—a force which most often greatly exceeds that ordinary pressure which Dr. Wylie considers they are unable to resist. Energetic vocalisation, while the ventricles are not inflated, must therefore involve either the forcing of the vocal cords from their right position for singing towards that which they assume when in a state of rest, thus producing a bad quality of tone, or an actual injury to the throat, through their being subjected to a greater amount of tension than they are intended to bear.

The inflated ventricles may also be regarded as playing the same part in the production of vocal tone as the mouthpiece does in brass instruments—i.e., concentrating the vibrations before they enter the resonant tube. We see then that what Garcia calls the "shock of the glottis" is really a shock of the upper glottis, which he thought was never closed. By the continued practice of this shock, the power is entirely obtained of inflating and maintaining the inflation of the ventricles, even during the singing of words containing consonants; but in that case their lips will not be brought into actual contact, since it is manifestly impossible to set up a complete obstruction to the passage of the breath at two places

in the vocal tube at the same time, but only near enough to insure the entrance of the breath, and its consequent downward pressure on the vocal cords. If, however, before this power is obtained, the student habitually uses real words when singing, or prefixes consonants to the vowels upon which he vocalises, the quality of the tone will certainly be impaired, since not only must such a proceeding divert his attention from the point at which the sound is generated—for the nerves of volition will then be occupied in transmitting a highly complex message to widely separate parts of the throat and mouth at the same instant—but the necessary regularity of the vibrations will be rendered impossible through the density of the atmosphere above and below the vocal cords being unequal. Whether produced independently, or accompanying vowels preceded by consonants, the presence of this distortion of the ventricles can always be ascertained by simply feeling with the finger and thumb just above the rings of the thyroid cartilage, and it is this habitual expansion which as a process of time causes that width of throat which so generally distinguishes those vocalists whose method of producing tone is correct.

Another result of the inflation of the ventricles is that when it occurs the whole body of the larynx is buoyed up in the throat, thus tending on the one hand to produce that hoarseness of timbre which Garcia says is a characteristic of sounds emanating from a raised larynx, and, on the other hand, to that forward production of voice which is so often insisted upon by singing-masters as essential to beauty of tone. For, as the cricoid cartilage is attached bodily to the top of the windpipe, while the thyroid cartilage is only articulated posteriorly to the cricoid, it will be seen that with every increase in pitch the vocal cords will assume a more slanting position, and thus throw the sound, doubly reflected from the epiglottis and the back of the pharynx, more and more towards the front of the mouth.

Mr. Linn regards the child's cry as being produced by the same action of the vocal organs as that which I have endeavoured to describe; and he argues, with great force and ingenuity, that it is to the bad influence of the consonants in daily speech that the prevalent false mode of phonation is mainly due. If young children were encouraged to speak and sing with full and free vibration of their vocal chords, and with inflated ventricles, this deterioration would not take place. But when a faulty method has been once acquired, the only way to maintain the natural action of the organs is to localise the thought and will on the point where the sounds are generated, and this can be most readily effected by practising the " shock of the glottis."

My own belief is that the improvement in tone which

without doubt does often manifest itself during, or in consequence of the practice of syllables beginning with consonants, as recommended by Mr. Corwen and others, is either confined wholly to the supra-laryngeal functions, or results from a partial inflation of the vestibule occurring independently of any consciously directed effort on the part of the singer; and I think that the proximity of the obstruction by which the letter *k* is formed to the seat of vocal tone, renders it less likely to divert the nerve-current from that point than any of the more forward consonants.

It is worthy of note that it is possible to perform tones of definite sounds with the discorded edges of the false cords alone, which thus seem capable of acting somewhat like the percussive action of an harmonium, and to afford the means for that quick and prompt touch required in singing such passages as occur in the great song of the "Queen of Night" in the "Zauberflöte."

In conclusion, I must offer one word of apology concerning the title of this paper, for I am afraid you will consider it to be somewhat of a misnomer, since I have said so little about the way in which positively beautiful sounds are formed. I regret very much that I have not been able to proceed farther with my subject, but I was compelled to the course which I have pursued by the strongly felt necessity of thoroughly investigating, in the first place, the mechanism involved in the production of tones that are simply right—i.e., formed in accordance with the natural action of the organs, and that has left no time to discuss the, perhaps, more interesting topic. I trust, however, that enough has been said to show how widely the opinions of eminent teachers differ on fundamental principles, and to demonstrate how absolutely necessary it is that the natural laws underlying this subject should be thoroughly investigated, and that, meanwhile, the practice of our pupils should be conducted in strict conformity with those already known.

DISCUSSION.

THE CHAIRMAN said the Society was much indebted to Mr. Stodd for bringing before it so large an amount of interesting information. He feared that some of their brother residents were not very wise in entering into physiology in their teaching. That, of course, did not apply to Gordon, but very often when a resident simply wrote a work on singing, he ventured to give him on the formation of the throat, and went into subjects which he did not understand. He thought it was rather an

open question whether a knowledge of physiology was really necessary. He should say that, in every case where it was possible to bring the muscles under the power of the will, it must be of great benefit to students to know where and what the muscles were; but he thought it was quite possible that in this case a knowledge of physiology might be looked upon more as an accomplishment than as a necessity. He had been much struck by the remarks on the influence of language upon singing, and there was no doubt a great deal in that. There was often a sort of national tone, and on going into a concert-room you were often able to say at once that a certain singer was a French tenor or a German. That was not universal, especially in first-class artists; but national characteristics were more often found in second-rate singers than in first-rate. That showed the advantage of giving a careful training in the value of the vocal sounds, not only of their own language, but of some language which had the best and purest quality of vocal sounds. Perhaps it was hardly fair to tax musicians with giving worthless hints on physiology, without giving the reason for making this charge. Some of them would remember that a few years ago there was a musician named Dr. Flowers, who had a theory that everybody in the course of his life had a certain amount of chalk formed in the throat, and that if they would use his exercises this chalk would never form to such an extent as to be injurious.

Mr. C. STURROCK said he remembered that Dr. Flowers had a large glass case in which he exhibited the pieces of chalk which his pupils had got rid of. He must say that it rather taxed his credulity, and he was not prepared to say where the pieces of chalk came from. He should have been more at home in discussing the paper if Mr. Stead had dealt with touch as the paraforte, which he had omitted.

The CHAIRMAN said he hoped Mr. Stead would give them his remarks on that branch of the subject in another paper. He feared this subject was rather too physiological for the Association to deal with very freely.

Dr. CARSON said he had read with a great deal of interest nearly all the works to which Mr. Stead had alluded bearing on the production of the voice; but with his physiological knowledge, slight as it was, of the action of the larynx, he did not think any of these books had thrown much practical light on the advancement of vocalisation. He should say that the production of voice was a thing utterly beyond the control that any physiological knowledge could bring to bear upon it.

The CHAIRMAN said perhaps Mr. Stead would be kind enough to say whether he considered this physiological knowledge to be merely an accomplishment, or how far he considered it a necessity. He was bound to say that life was so short that if you could make fine singers without bothering

them about the inside of their throats, it would be an advantage.

Mr. Swan said his position was simply this, that there was a very great amount of bad vocal tone heard in the musical world, and unless you could arrive at some definite principle, so that you could say to a man, "You are singing rightly or wrongly," you really could say nothing to him except, "Sing as I do!" Now it was not always that a teacher could sing very well himself, and, after all, it was not desirable to produce a number of imitations of any singer, however good. It appeared to him it was totally unnecessary for very young pupils to know anything about the inn and outs of this discussion, but he thought that older ones ought to know enough about the subject to enable them to appreciate the reasons of the instructions given by their master. He had himself found a great deal of assistance in speaking to pupils about their tone, when he could say, "You are not singing with a full inflection, and if you put your finger on your throat you will feel whether the larynx is up, and whether the ventricles are dilated." When one could say something definite of that sort it was certainly an advantage. The father of some of his pupils was talking to him about the subject of this paper, and his observation was, that musicians were always running into theories which they could not bring to the test of practice, saying one muscle acts in this way, and one in another; but what was the good of it all? With regard to the production of different registers, he thought they were told a great deal which had no practical bearing on the matter in hand, but when you could get hold of an idea which you could bring to the test of external experiment, you had something which would really enable you to bring your pupils forward more quickly. That, after all, was the great point, and he contended that the possession by the teacher of a knowledge of the true action of the vocal organs must conduce to this end. They did not want their pupils to eclipse a Lind or a Fontana, but to make the best singers out of them in the best possible tone. He did think that in all cases a right system should be followed, since nowadays people had not time to devote five years to practising the contents of a single sheet of paper. They wanted results attained more quickly, and, in order to obtain them, they must cause their pupils to localise their thoughts on the place where the sound is produced. If it were proved, as he thought it had been by Dr. Wylke, that when the ventricles were not dilated the vocal chords had a strain to bear which they were not calculated to bear, if there was a right method and a wrong of producing sound, and if you could make a pupil realise, by external touch or by ministerial sensibility, the difference between the right and the wrong, then you had attained something really useful. He was sorry

there had not been more discussion on this point, because he came as a learner as well as a teacher, as a teacher who hoped always to be a learner. He should like to ask if any member could give him any information on the direct working of the system of voice-making which he believed had been always followed by Dr. Buck, of Norwich. He had been told that his boys were always obliged to vocalize with a closed mouth—in fact, to hum. That appeared rather a curious way of developing the voice, but he had made one or two little experiments with it. He had not trained any pupils upon it, because he did not believe a possible artist was the right sort of body to experiment upon; but he had asked pupils and others to hum through the compass of their voices, and he found generally that they could hum for about two and a half octaves or three octaves without any sensible break whatever. If that were the case, he should be inclined to regard it as a proof that there was not such a very great deal of difference between the various registers of voices as was generally supposed, or, at any rate, that an actual knowledge of the physiology of that matter was not so necessary, but that, as Dr. Strozier taught, after all, the difference of register was more a matter of resonance than of intrinsic difference of production.

Mr. BARRY said he went over Dr. Buck's school sometime ago, and saw the apparatus which he made for the use of his boys. It was simply a piece of hardwood with a slit in it, which he put between their teeth, and made them sing through it.

Mr. STROZIER said Signor Ferrari used to do the same thing. There was no doubt that Dr. Buck produced some of the best singers known.

The SACRISTAN said he thought there was an important difference between what Mr. Barry described and the apparatus used by Signor Ferrari. That was merely a small block placed in the mouth, but the instrument used by Dr. Buck, according to Mr. Barry's description, was more like a second mouth, with a sort of post-office slit in it.

Mr. BRUCE said Mr. Barry's information seemed to contradict what he had been told, that Dr. Buck made his boys sing with closed mouths.

The CHAIRMAN said he had also heard it stated that he made his boys hum. With regard to opening the mouth, he might remark that Herr George, at Brighton, had received a little wedge labelled with the various vowels, and with notches in it, so that you might graduate the pupil's mouth according to your idea of what the opening should be.

Mr. BRUCE said he was sorry he had not been able, in the present paper, to treat upon the influence of the opening of the mouth upon vocal tone; but he did not think it possible for any person, however clever he might be, to produce any two

words, or any two qualities of tone, or different degrees of intensity, or even any difference of pitch, with the mouth in precisely the same position, without the tone being sensibly deteriorated in one way or another. The fact was, the more clever a singer was the more difficult was it to get him to analyse his own sensations. Signor Randegger, in his new book, directed the pupil to sing *scappino* exceeding over an octave without any movement of the mouth; but he contended that was quite impossible. You must alter the mouth either in shape or size for every modification required.

A vote of thanks to Mr. Stead, proposed by the Chairman and carried unanimously, closed the proceedings.

FEBRUARY 2, 1886.

OTTO GOLDSCHMIDT, Esq., Vice-President,
IN THE CHAIR.

MUSICAL AESTHETICS.

By RICHARD J. BRIDGESHAM, Esq.

Many writers, nowadays, in treating of any subject, have the greatest difficulty in finding something new to say, so much having been said before them upon almost every variety of theme. In the subject of this paper I am, to some extent, free of this embarrassment; but my task is, I feel, not the less difficult on that account. When I say that writers have not given much attention to the subject of musical aesthetics, I allude more especially to English writers. The Germans have, indeed, bored themselves more than we have in this way, as might, perhaps, be well supposed from the somewhat abstract nature of the subject. But even they have not done so much with the particular branch of aesthetics relating to the musical art as one would have expected. If I myself enter this field, it is not, by any means, that I consider myself one most fitted for the labour; but I do so rather in the hope of inducing those so fellow-labourers able than I am to clear the ground of its difficulties.

The reason of this assumed want of attention may be that artists, and particularly English artists, are, as a rule, impatient of any art-teaching of a non-practical kind; or, if theoretical, any such that does not bear directly upon the practice of their art. They are inclined to regard, with some feeling of disgust perhaps, all art-philosophising, and especially if such comes from any not much acquainted with the technical side of art. This, of course, will not be taken as importing any blame to the artist; for if we consider how very little a certain class of art-literature can possibly influence or affect art-practice—how much of this writing is, in fact, nothing but sheer verbiage—we can scarcely be surprised at the readiness of the true workmen in art to let the philosophers have the game all to themselves. The English artist must always have clearly before him the realisable object and outcome of his labour; any sentimental speculating over the tendency or mission of art in the abstract becomes inadmissible

to him. He relies upon his own instinct to lead him aright; he prides himself upon knowing his work and doing it without the need of guidance, except that purely academic. Even where the art-teaching is of too sound, sincere, and thorough a kind to be so ignored, he will be careful to abstract what will afford him practical nourishment from what he will likely regard as mere practical fine-writing. But, nevertheless, there must be certain lines of art—followed unconsciously, perhaps, by the artist—according to which, in forming our taste and increasing our knowledge in art matters, we must judge all works. Even if the artist be allowed to work independent of rules—and we know very well practice has always preceded theory—some enlightenment as to the nature, aim, and capabilities of any art will be required, at least by the lay-follower of the same. The want of some well-grounded and generally adopted philosophy of the musical art is, at the present time, most evident.

What I propose doing here is to pass in review certain opposing theories already put forward, and I can pretend to do little more than give a fair presentation of these. The application of the word "aesthetic" is at times very wide, and at other times very narrow. Some employ it in a sort of adjective sense, to denote generally whatever may appeal to a cultivated and refined taste; while others use it in connection with the stricter forms or the purely artistic elements of art. Properly, according to its Greek derivation, aesthetics should be the science dealing with sensation or perception. The word itself does not indicate what sensations, if not all, are implied; but it is to be understood that they are those said to be of a beautiful nature, or which have for their exciting cause objects possessing certain properties which render them capable of impressing agreeably, in particular ways, the mind or sense. To aesthetics, then, is committed the task of determining these properties, and the relationship between the objects of beauty and the changes in the condition of the mind which accompany the perception of these: the more restricted meaning of aesthetics being, then, the science of the beautiful. Aesthetics, besides dealing with general ideas of the beautiful, must show how far the beautiful manifested in nature's work is capable of being followed out by the artist in his work, each department of art requiring here separate treatment. The aesthetic objects are properly those perceptible by the eye or the ear; and besides having certain qualities of colour, form, and tone, immediately gratifying to these organs, must be so presented as to satisfy our more intellectual sense of and requirement for unity, symmetry, proportion, and variation. With the establishment of these conditions for the work of art, and the inquiry into their fulfilment, aesthetics, as a science of the beautiful in art, is generally accounted complete. But

It has never been univocally agreed that beauty signifies altogether an intrinsic and independent property of the object itself: some considering that only certain states of feeling or mental needs are to be considered primarily; and that an outward object can only be designated "beautiful" in so far as it accords or is associated with these same. No wonder, then, that, entangled at the outset in metaphysical difficulties, the work of establishing some definite code of æsthetic laws for an subtle art as that of music should not have advanced very rapidly.

Although, from Plato and Aristotle downwards, the subject of beauty had been often enough discussed, the first to elevate æsthetics, under this name, into a distinct science, was the German Baumgarten, a disciple of the philosophers Wolff and Leibnitz, whose work on the subject was published in 1735. Having to do with beauty, which he defines as "the perfection of conscious knowledge"—that which we gain through obscure perceptions—æsthetics is distinguished from logic, which, aiming at the establishment of positive truth, deals only with clear conceptions; and from ethics, which latter, seeking to arrive at the knowledge of perfect goodness, has for its study the manifestations of the desires and the will.

Sailer, a follower of Baumgarten, made an extended survey of the æsthetic details of the several arts. His work, however, has somewhat the disadvantage of being arranged in lesson form. He is indebted, too, to Kirnberger for many of his ideas respecting the musical art. Sailer, after having first laid down that the chief aim of art is to put into play certain feelings or dispositions of the soul, assigns to æsthetics the task of inquiring into the origin of these feelings; of determining the precise nature of the æsthetic objects, and the conditions under which they must be subjected to our perceptions; and the exact situation of mind in which we are best able to receive their influence. Æsthetic material in general presents itself, according to him, under three different aspects, making an agreeable impression upon us in so many ways. Either it appeals to our understanding through its approach to perfection or adaptation to certain ends, or it appeals to our imagination through the senses, or it pleases us by a sense of its moral worth or power of beneficial application. Sailer illustrates by a diagram the union of these three elements. As its hardness and indestructibility it may be taken as representative of that class of things which please us corresponding to our idea of perfection; by its brilliancy it gratifies our bodily sense and stimulates our imagination; and its necessary value may stand for that quality of goodness in a thing which pleases without respect to its form, or material, or utilitarian aim. The æsthetic object, to be accounted beautiful, must be clear to comprehension; it must have manifold but orderly variety

of parts; and unity in the whole must prevent any of these parts becoming too obtrusive. Schlegel would not have it that the work of art were its own end; it must serve some higher moral purpose. He says it does nothing to startle a man by a sudden cry, as if some great misfortune had happened, but to awaken in him horror over a crime committed in something of much greater importance. It remained for Schlegel to decide that, though art was certainly moral in its tendencies, its moral application was not the very first subject for consideration. Music, according to Schlegel, was especially the art most suitably employed as a disciplinary force or pedagogic aid.

Instead of carrying out their programmes fully, German writers on aesthetics mostly occupied themselves with the general theory of beauty. Those, indeed, who treated of the separate arts took up as one particular branch—as Winckelmann, who made known the principles of Greek sculpture; and Lessing, who, in his "Laocöon," marks clearly the boundary between poetry and painting. These philosophers who treated upon music in their general treatment, such as Kant, Herder, Goethe, were, no doubt from want of practical converseance with the subject, far from establishing any sound basis for musical aesthetics. The matter is, again, by some treated very superficially, music being regarded as consisting in little more than a sensuously gratifying succession of sounds; or, on the other hand—the writers having, like Saul and David in their mind's eye—looked upon as a curious means for mental and even bodily ailments. The works of Forkel, Riegel, Kirnberger, among others, may be mentioned with greater respect; but these writers do not put forward any complete system.

The one, indeed, who may be said to have written the first complete treatise on the subject was Professor Hurd, of Jena, who published the first volume of his "*Ästhetik der Tonkunst*" in 1812. The author's views are logically and philosophically propounded, though the writing, to an English reader perhaps, has hardly that clearness that might be desired. Hurd, following the lead of Baumgarten and Baum, recognises the division of aesthetics into a general theory of the beautiful, and a special aesthetic for each province of art. Musical aesthetics, as the philosophy of the beautiful in music, being distinct from acoustics, which concerns the natural laws of sound; and from harmony, relating to the grammatical combination of musical tones.

Hurd does not occupy us long in the discussion of the beautiful in the abstract. He goes upon the assumption that we form in our minds the idea of beauty to which we refer all outward appearances. He says that "as we have now the beautiful in us, and the object has only the property to excite this feeling of the beautiful in our inner nature . . . we

beauty within us the music to be questioned, that may solve any outer problem." In a stricter sense, the beautiful, he tells us, may be said to exist only within the range of perceptible forms, but only in so far as the object is the free expression of some spiritual activity. The thing which exists in us the feeling of the beautiful may itself very readily be mistaken for and accounted as the beautiful; but the beautiful is truly that of which this is but the expression.

As respects the musical art, outward nature, according to Hand, gives man little for imitation; she but presents him with her working materials. Music, properly understood, being the expression of some free intellectual nature, the song of birds, while obeying some blind instinctive impulse, or the sounds of inanimate nature, cannot strictly come under this designation. The music of man he characterizes as follows: in the first place it is, as just remarked, purely his independent product, as shown in the arrangement of the sounds nature gives him—the formation of his scales, the grouping of his harmonies, the establishment of his rhythm—all of which is quite arbitrary on his part; in the next place, his music is the direct outcome and expression of his spiritual condition; and finally, through his music, the emotional nature is not only interested, but the whole range of his intellectual or reflective faculties is called into action.

The beautiful in music, as the expression of this free activity, may show itself in the harmonious relationship of the parts of a work, the logical sequence of tones, and the charged and well-regulated harmonies: this constituting formal beauty. Thus, as every individual has some characteristic mode of expression, music through the diversified changes of harmony, rhythm, tempo, quality, &c., may depict the various shades of inner feeling: thus characteristic beauty is shown. But in certain music we are called altogether into a new world of ideas, and are reminded of things higher and more spiritual than ourselves: here the characteristic becomes allegoric. In such music we have present what is termed ideal beauty. According to the poet these elements of beauty take in the musical work a classification of distinct styles may be made. On the one hand we have those which please more by their agreeable forms of presentation, such as the charming, naïve, graceful; then, again, those appealing to sentiments of a wider reach, as the sentimental, noble, pathetic, grandiose, and sublime; and again, those wherein the conflict between human freedom and necessity is touched upon, as in the sorrowful and the tragic; other styles, as the romantic and the heroic, being formed from time to time.

Hand's work has been generally recognized in Germany; and the little English work on the subject, by Mr. Pauer, is based on Hand's method. But I come now to speak of a

work which aims at a thorough subversion of the popularly held tenets of musical philosophy. This is an essay by Dr. Edward Hanslick, the well-known art-critic of Vienna ("Vom musikalisch-Schönen; ein Beitrag zur Revision der Ästhetik der Tonkunst"), which has undergone a translation into French, but not, so far as I am aware, yet been introduced to English readers.

Hanslick complains at the outset of writers on musical aesthetics having based themselves in attempting to discover what feelings are aroused by music, or how feelings may be expressed by music, rather than with any sound inquiry into the positive nature of the beautiful in music. He condemns their efforts as unphilosophical, and their teaching as productive of nothing but a false sentimentality, which, however gratifying to certain minds, affords little real delightment to the earnest student. A more scientific method, and one better suited to the spirit of the age, he thinks, ought rather to be followed. Instead of commencing with the subjective impressions created by the work, we can proceed properly only by learning to examine the thing more in itself—getting to see what it really is apart from the thousand-fold changes of impression it may produce. Poetry and the plastic arts, he asserts, are far ahead of music in this respect. Consciousness here, for the most part, abandoned the notion of adapting a general æsthetic principle to each and all of the arts. The laws of each individual art are dependent upon the peculiarities of its material and its texture. The object of beauty and not the æsthetic subject must occupy us in æsthetical investigation. We have been taught that since music cannot, like poetry, appeal to the understanding through ideas, nor, like painting, through concrete forms to the eye, its mission must hence be to work upon the feelings of man. But wherein lies the connection between music and the feelings—between certain musical forms and certain distinct conditions of the mind or soul; after what laws of nature the effect is produced; according to what rules of art the work, to have always the required effect, should be constructed—we are left altogether in the dark. The feelings are here called upon to play a double rôle. In the first place music is said to have for its aim the awakening of the emotions; and, in the next place, the emotions are said to form the subject-matter of the artist's work. A thing that is beautiful in itself, says Hanslick, remains such even if it should excite no emotion, or if even it should never be examined or inspected; it may be produced for our gratification, but does not gain its quality by virtue of the share we take in it. Hanslick goes on to distinguish between perceptions (*Empfindung*) and feeling or emotion (*Gefühl*); we are perceptual of the sound, colour, taste of a thing; if joy, melancholy, hope or hatred take us out of our normal state, we are

said, in ordinary language, to feel. The elements of beauty must, at first, be received through the senses; but, according to common thinking, music should dispose us to feelings of reverence, love, regret, and so forth. But the faculty with which Hanslick would have us regard a work of art is that which he terms the *Fantasie*, or fancy, and the attitude of mind that of pure contemplation (*reine Anschauung*).

So far as I can gather the author's meaning this contemplative attitude is to be understood as the attention-observation of the changes and manifold combinations of tonal forms, heightened by the pleasurable participation of certain of the intellectual faculties. Although Hanslick says that aesthetic laws must be based upon the peculiarities of the special art, he cannot resist making a self-reference to other arts than music to illustrate his argument. To what architect, he asks, has it ever occurred that the purpose of his building was to excite certain feelings in the mind of the beholder? The feelings in relation to an art-work afford rather a subject for psychological than æsthetical investigation. As Hegel remarks: "What is felt, remains concealed in the form of abstract, individual subjectivity; and, therefore, the distinctions of this feeling are, likewise, quite abstract, and no distinctions of the thing itself." Hanslick asserts that there is no universal and necessary connection between the work and the emotion raised by it. The same piece may work very differently upon different people, not greatly dissimilar even in point of age, temperament, nationality, or condition. Some find their utmost pleasure in listening to a concerto of Bach or one of the last quartets of Beethoven, whilst others would be altogether unmoved thereby. It must be noticed that Hanslick does not deny the power of music to create emotion: he speaks of music's capability to rouse the stronger passions, and of the soft, tender music into which she is able to lull her votaries. He declines simply against what he considers the unscientific adoption of this property of music, as forming part of æsthetic study. Joyfulness and sadness, he remarks, can certainly be called forth by means of music; but not in a greater degree than through the fortunate winning of a lottery prize, or the news of the death of some one dear to us. But so long as one cannot class such things as lottery-tickets or physician's bulkins with a symphony or an overture, so, he thinks, one cannot treat fanciful emotion as constituting an æsthetic speciality of music or any particular musical work. As regards the subject-matter or contents (*Inhalt*) of any other art than that of music, we can generally denote this in words, or make sensible to distinct ideas. We can say, for instance, such a picture represents a flower girl, such a piece of sculpture a gladiator, such a poem a deed of Roland. The more or less complete realisation

of these ideas, according to the materials at the artist's command, decides as to the beauty of the work. But the feelings do not stand severally as isolated in the soul that they can be depicted by an art incapable of conveying other affections of the mind. To understand what the exact emotion is, we should be acquainted with the precise notions or mental conceptions determining it. Hope, for example, is inseparable from the idea of a happier condition, love is associated with the thought of some adored individual; melancholy is induced by the comparison of past happiness with the present. Take away these generating ideas, and the feeling without them can scarcely be designated that of hope or anything else in particular, nothing but the feeling of vague satisfaction or unconscious reminiscence. We may associate in our minds the colour red with the sentiment of joy, or white with the idea of innocence; the key of B major may be taken as symbolical of misanthropy; satisfaction may be supposed to dwell in the third of C, or rage and despair in that of the diminished seventh. But, according to our author, this is altogether our own fanciful interpretation; the colour or tone cannot strictly be said to convey these notions. There are many words, Hanslick remarks—and he instances the "48" of Bach—which are admitted not to have much to do in the way of exciting or bespeaking emotion. So, he declares, to support a theory, the whole range of figured music must be ignored. Or, he says again, let a theme from a symphony of Mozart or Haydn, or from an adagio of Beethoven, a scherzo of Mendelssohn, a prelude work of Schumann or Chopin, be played, or even some popular overture-motiv of Auber, Donizetti, or Flotow;—if it were searched what is the particular sentiment of the strains, the most widely different interpretations may be expected. Can this, he asks, be the true expression of a definite emotion when no one can tell clearly what is intended to be expressed? Hanslick restricts his observations to purely instrumental music. He considers that a union of music with poetry may increase the power of music, but does not extend its bounds. What instrumental music cannot perform, it should never be said that music can do.

After being informed what the beautiful in music is not, we are led to regard what it is positively. Hanslick characterises it as *specifically musical*. There can be no subject-matter but that of the musical tones themselves, in an artistic combination. An illustration is afforded us by the arabesque ornamentation in painting, or by the changeful forms and colours of the kaleidoscope—only that the forms of the latter kaleidoscope emanate from a creative mind, while the others are but those of an ingenuous mechanical toy. So the composer's work is altogether of an objective nature. Not the desire to express some personal emotion, asserts Hanslick, prompts the composer,

but that rather to invent some original and specifically musical strain. A piece might seem to us to sound proudly or sadly; but we should be wrong to assume that the composer necessarily felt proud or sad at the moment of composition. But, strangely enough, what he denies to the composer, he allows to the caretaker of the work. He grants to the performer the power of making his emotional nature manifest, faithfulness towards the composer's notes only being required. He says that through a musical box may not move its listeners, yet the most unpretentious vocalist may, when he sings with his whole heart and soul. Hanslick then considers the nature of emotion caused by music. That music directly affects the nervous organization is, of course, a physiological fact; but no satisfactory account has yet been given of the relation of the physiological variation to the resulting psychological process, of the exact manner in which nervous changes are followed by corresponding changes in the state of the mind or spirit. Acoustical science, especially with the light of Helmholtz's researches, can explain why one sound should appear shrill or repulsive, another clear and pleasing. But how should certain successions of tones equally consonant in themselves arouse so many distinct sentiments of the soul? And here is Hanslick's error. While one cannot clearly show the relationship between psychological changes and the varied phenomena of sound, neither can one base scientifically a theory of the beautiful upon the uncertain effects of the latter. The ordinary listener enjoys music in the passive reception of its sensuous elements. His relation towards music is not introspective, but "pathological." A first cigar, a delicious meal, or a luxurious bath affords him the same species of gratification. The true musical listener, however, attends more to the structure of the composition, noting what, in this respect, distinguishes it from any other musical work. Upon savages, music exerts a more direct emotional influence than it does upon cultivated people. With cultivation the listener loses taste for the mere elements of art. Hanslick is led then to the conclusion that it is the artist who feels best. The man of sentiment inquires whether a piece be joyful or sad; the musician, on the other hand, whether it be good or bad. He sets, in opposition to what he understands as the true way of hearing music, the rough emotion of the savage in the same class with the demure intoxication of the musical sentimentalist.

The first objection to Hanslick's views is to be made with respect to the too definite ideas he attaches to the emotion expressed or induced by music. This cannot be said not to be sufficiently precise or clear because its meaning cannot be conveyed by words. When he says that the connection between certain music and certain feelings is not always a necessary

one, and that a piece may move some to tears while it may leave others cold, or a thousand circumstances alter its effects upon the same person, thus proves nothing but that for the proper reception of a work a certain susceptibility and knowledge on the part of the listener is demanded, which is not possessed by all, and that it should be heard under fitting conditions. Even to accept Hanslick's narrow view of the beautiful, the elements of beauty which please universally are but very few. They may be restricted to certain colours, forms, and tones of a limited number. And because emotion caused by real events cannot come under aesthetic rule, we are not to allow a place in art-philosophy to fastidious feeling! It has long ago been established that upon imitation and illusion the whole being of art centres. The emotion raised by the power of art is distinct from that brought about by things of reality. It may, perhaps, be said to be the imaginative revival of past emotions which art induces. According to an English writer, to whom I have to refer, the emotions in art are ideally created. Lobe, in his criticism of this essay, says that not our opinions as to the beauty, but simply as to the truth of the artist's representations, is formed according to the degree in which his idea is embodied in perceptible form—that which we generally consider as beauty residing more in the formal treatment than in the subject. He quotes a passage of Scheller, which I render as follows: "Many I feel go wrong in so far that they make the idea of beauty relate too much to the matter of the work rather than to the handling of the same. So must they be somewhat at a loss when they would compare under this idea of beauty the Vatican 'Apollo' and other forms of beautiful exterior with the 'Laocœus,' a lion, or any other painful and ignoble representations. It is the same with poetry. People have ever perplexed themselves in the attempt to reconcile the rough, often low and repulsive characters in Homer and the tragic poets with ideas formed of the Greek beauty. Would that we might venture to put aside the idea of beauty, and even the word itself, with which all these false notions are inseparably connected, and set in its place the word truth."

Although some works may be of a more formal character than others, yet a piece, so long as it is meant in any sense, must have some emotional colouring, even if, as Ambrose remarks, "it only expresses the feeling of awe!" and as Lobe again very strongly puts it, even if forty-eight men were shown to be utterly devoid of emotion, it does not follow that all men should be so likewise. Hanslick's kaleidoscopic notion has been taken up by a French writer, Charles Hucquart, author of "*Philosophie de la Musique*." It may be very attractive to some minds; but I would compare the Hanslickian writer to one who would remain untouched through-

out the performance of some dramatic work; who would not submit himself to the illumen of the piece, but would content himself with criticizing the performance, or in watching the ingenious development of the plot. A poor story would be to such an one as good as a Shakespearean tragedy, provided it were constructed after certain rules. If emotional effects are not to be considered at all, why should, say, a change from a grave strain in a minor key to a jingling one, or a monotonous succession of movements all in the same key and style, be regarded as aesthetically wrong? Nothing could be used against them, at any rate, on Hanslick's ground. So long as people believe that they discover something more than mere togethery in a composition, and while certain effects are undeniably present, the philosophy of the art, to be complete, ought to take some notice of them.

With respect to the "pathological" argument, Hanslick overlooks the fact that the ear and the eye are distinguished from the other organs as pre-eminently the æsthetic organs. I cannot do better than quote the following passage from one of the philosophical essays of Dugald Stewart: "To the foregoing considerations, however, I must not omit to add, as a cause conspiring very powerfully to the same end, the intimate association which, in our apprehensions, is formed between the eye and the ear, as the great index of our acquired knowledge; as the only media by which different minds can communicate together; and as the organs by which we receive from the external world the two classes of pleasures which, while they surpass all the rest in variety and in duration, are the most completely removed from animal indulgence, and the most nearly allied to the enjoyments of the intellect. The unconsciousness we have, in both these senses, of any local impression on our bodies forms may, perhaps, help to explain the peculiar facility with which their perceptions blend themselves with other pleasures of a rank still nobler and more refined." Though we may not be able to explain how every sensation experienced by sound resolves itself into a particular state of mental feeling, still the true artist knows with certainty what will convey his intention, and the listener, if his art-sense be sufficiently cultivated, recognizes the fitness of the means to the end in view. And there should be some state midway between that of the emotional savage or the sentimental dreamer and that of Hanslick's ideal listener. We arrive at such when we can regard the work with critical appreciation of its form, design, and so forth, and at the same time share also in its emotional contents. One would think, too, that the most highly cultivated listener, according to Hanslick's definition, and the one most unapproachable to emotional influence, could not help, to a certain extent, being seriously affected by

medical sense. But the author is led into many other inconsistencies in his desire to regard the work of mystical art as something purely objective. Whether his remark be true, that the artist is the man that feels least of all, I will leave to your own judgment. I can simply give another sentence from the author I have just quoted: "Objects of whatever kind," says Stewart, "which please the connoisseur alone, prove only that there is something fundamentally wrong in the principles upon which he judges."

I have now just to notice briefly a recent work on aesthetics, by a French writer, Eugène Véron. Instead of attempting to construct a theory of the beautiful, *à priori*, Véron commences by taking a glance at the development of the artificiality in man. However far we look back in the history of mankind we find some tokens of art of however rude a kind. Art is not, then, altogether the outgrowth of an after-consideration, but the spontaneous manifestation of that superior intellectual activity which distinguishes man from the lower animals. Speech and writing owe their origin to man's instinct of imitation. It is not very difficult to believe that the sounds heard by primitive man should have produced certain impressions upon him, and that he should have been led to denote the letter by sounds more or less resembling their immediate causes. Thoughts, always transient, expressed themselves through tokens, whether in picture or tone, in the exact order in which they were disposed in the mind, the spectator or listener determining as best he could the relationship between them. But there came the need for greater precision and clearness in the expression of his ideas. Better to correspond with the new state of intelligence, other modes of expression have to be sought. These can only be found in signs purely conventional. Then, by opposition, the concrete and personal impressions came to constitute the domain proper of the pictorial and musical arts. Art, in disengaging itself from the qualities purely logical and intellectual, becomes more clearly defined, accentuated, and extended. It is no longer a necessity, but a play, having for its principal aim the interest of the sensations and sentiments by means of images and sounds. Man, being man more essentially a sympathetic entity, can rejoice or grieve over the sorrows or pleasures of others as well as his own; and, besides, his power of imagination enables him to arrange fictitious events and present them to himself under colours even more striking and vivid than those of reality. To this may be added the admiration he has for the skill of the artist shown in any work of art. In modern art, too, the man is inseparable from the work; and we value the work, to a great extent, according to the measure in which the artist's individuality in it is declared. All this, combined with the gratification afforded to the ear and eye by a well-ordered display of

colours, tones, or forms, makes up the æsthetic delight. As such little precision is attached to the word beauty, Vison would discard it, and giving a wider application to the term, define æsthetics as "the science having for its object the study of the manifestations of artistic genius."

When considering the musical art separately, Vison refers to the opinions expressed by our own English writer, Mr. Herbert Spencer. The latter, in his essay on "The Origin and Functions of Music," seeks to show how distinctions in vocal sound are physiologically resulting from changes of feeling or emotion. We are so accustomed to find a certain state of feeling always expressing itself in certain cries, accents, or tones, that at last the feeling and its mode of utterance become so associated in our minds, we no longer hear the sound without the allied feeling being recalled. In vocal music we find this emotional expression carried to its utmost extent. And the significance of musical sounds generally, with all their variations in pitch, timbre, force, interval, he takes to proceed altogether from this relation between emotion and its ordinary manifestation. And, moreover, other sentiments and moods, far more various, subtle, and complex than the simple emotion, arise; for which, however, the musician, most susceptible to these than the generality, finds the proper mode of utterance.

These theories may appear, in themselves, insufficient and probably too speculative. But if they can be supported, a better ground for some æsthetic system will be afforded than Hanslick's theory, as any man, could give us. If musical ideas could be shown to follow some natural law of expression, and some higher significance be shown to exist in their connection and general disposal, it were better than to regard them as only appealing to the interest of the ear through a certain skilful arrangement of elements and forms. Hanslick's work has been said to have opened a new era in æsthetic criticism: it has certainly induced writers to examine a little more carefully the boundaries and capabilities of the musical art; it has put an end to the fanciful notions of such writers as Mielissen and Schubert, who give recipes, as they may be termed, for producing such and such musical effects. There are people, too, who think more about the "aim" attached, perhaps, to some piece than about the music itself. If these can be led to study rather the "architecture" of a composition—its formal structure and development—so much the better. But certain German writers on musical æsthetics have of late gone perhaps too much to an extreme. Taking up what I may call the positive side of musical philosophy, they have so narrowed the subject as to make it relate to little beyond the study of the physiological sensations of tone. Whatever advances musical knowledge may make through them, it is to be doubted whether

the field of aesthetic inquiry is strictly of so limited an area. Though, to my mind, Hanslick's work is very unsatisfactory, still the amount of interest it has excited elsewhere, though little known in England, I thought might warrant me in discussing it in this place. I will only say, in concluding, that I can fancy nothing more likely to bring about ineffective and unending work than for a composer to take up Hanslick's theory, and fashion his ideas as far as he can in imitation of a kaleidoscope display.

DISCUSSION.

THE CHAIRMAN having invited remarks on the paper,

Dr. STUBBS said he could only speak with diffidence on so very wide a subject as musical aesthetics, but having given some attention to subjects surrounding and connected with it, he had come to the conclusion that nothing would ever be really done with it, or at all events that it would never be properly dealt with, until it should be approached as a subject to be studied philosophically, because the moment the question of musical aesthetics was considered it would be found drifting into one or other of two views. One view was that the idealism apparently existing in nature must also be recognised as relating to subjects of art, and in taking up the subject of aesthetics, it was considered by many that the source of beauty was but the reflection of the beauty of the Deity. In this view a musician was just as much a prophet as the prophets of old, only that he wrote his prophecies in sounds instead of in words; and those holding that view considered that the possessor of musical genius was the possessor of that fortunate correlation of art with nature. The modern idealist did not desire to advocate the idea that there existed an ideal of everything in the universe, as was held by the Platonists, but they to some extent coincided with the old notion of idealism, because if our ideas of the beautiful were derived from direct intercourse with the Deity, they could only be obtained from something existing in the Deity, and must therefore have had an eternal existence, and as far they coincided with the idealism of the Platonic school. Then by the other school they would find themselves taken in an opposite direction by their authors, notably by that of Vitruvius, whose book was no doubt of great value, although really there was very little about music in it; but those who were at all afraid of having their ideas as to the very foundation of music dug away from under their feet, had better perhaps avoid it. It commenced by tracing back all ideas of the beautiful and of justice, or whatever was right or wrong, to the outgrowth of man's own views

of what was practically either "nice," which was pure sensationism, or what was simply useful, which was one of the results of the socialistic view. In taking that view of art, writers of that school asked people to believe that men as themselves possessed the germs of the very highest art, which certainly must be allowed to be true, looking at the history of humanity, and which in mass was simply giving expression to the high faculties which had not hitherto appeared in the world, perhaps because people had not yet been educated up to them. But that view of the matter was purely subjective, and the school of idealists holding it really made the question subjective, not objective, so that in their expressions with regard to the excellence of the work being in the man only, they naturally always alluded to the work of the man being the important factor in a work of art. In that way people would find themselves drawn either to be idealists or materialists—not a very pleasant choice; but he thought there was, after all, a middle course between them, and would venture to state it, however unpopular middle courses were in those days. It was not a compromise exactly, but still he did not see why their ideas of the beautiful in art should not possess something of both views, first, that these ideas did exist in the Divine mind—all Christians must say that—and also that men had faculties given them to work out, so that in time they should be able to appreciate that Divine beauty and to express it. Such a view seemed to be the only reasonable one, because it embodied the best points of idealism without reducing people to an altered extreme, while it partook of materialism by making men to a certain extent the authors of their own future in art. That middle view, therefore, between the two extremes seemed the only satisfactory one. So much for the philosophical side of the question. Then as regarded the criticism of music as an art. That was assailed from two very opposite sides almost as divergent as the two philosophical views of the origin of music. Materialism claimed for music that one of its greatest virtues was that it was so indefinite. When he was told, in sitting down to a composition, that such and such a thing had a definite representation he rebelled against it, and would prefer not to be told so, but to be left to himself to interpret his results in whatever way he chose. Another school of art-critics had gone to an exactly opposite direction, and had treated the subject as an art in itself. The question was really whether the indefinite nature of music elevated or diminished its character as an art, and his own opinion was that it elevated the art of music. In the highest works of art in other spheres, for instance, the best schools of painting seemed to aim not at entire perfection, but merely as it were to unlock in the mind higher trains of thought; and such productions should be considered as far higher works of art than those which followed

the pre-Raphaelite schools. All art should therefore be valued according to its power, not of calling up a definite set of emotions, but rather, so to speak, of setting them going. He valued a musical work, a symphony of Beethoven or of Mozart, not only in itself, but for putting him in a certain frame of mind; and they all, probably, after hearing a fine piece of music, would prefer to be left alone until the effect it had produced upon them wore off. With those who called that a defect in music he could not agree; he thought, on the contrary, that it was a source of great beauty. Another point was the arbitrary character of the laws of musical art. A vast amount of mischief had been done to art by holding that its laws must be exact. Could anything, he would ask, be less a work of art than the Multiplication Table? But, as people's education improved, and as the nation worked on and humanity at large progressed, there must necessarily be a shifting standard in every sphere of thought, in religion and philosophy as well as in art, and therefore to say that the laws of music must necessarily be exact was fallacious and wrong. Another matter to which he would allude was the curious mixture, in very great and sublime works in music, of something intended to be funny or odd—a fact no less striking in musical works than in the plays of Shakespeare. In Beethoven's music there was often something which excited surprise or laughter, though on the whole the work would perhaps evoke a religious feeling or emotions of awe. So it was in some of the most sublime passages of Shakespeare, when a funny fellow would be introduced to set the theatre in a row. In fact, such artists seemed almost a law of nature, and certainly people could see and appreciate the ridiculous more clearly when set against a background of the sublime. Such contrasts were of universal occurrence, as, for instance, in courts of law, where, while some poor creature might be on trial for his life, the most abominably poor man would set the court roaring with laughter. Doubtless the absurd and the ridiculous present themselves vividly when standing out on a background of deeper thought. As regarded Dr. Henshek's recommendation that people should study aesthetics of music deeply in order to get better ideas of its effect, he must disagree, for the aesthetic or emotional effect of a piece of music was exactly the result of what the composer put into it. Emotions passed through the mind of a being very delicately organized like a composer which would enable him to write pieces appealing variously to the feelings; but he thought that to study or look for those feelings in the actual pieces of music itself was illusory, because they could only be extracted from the music by a sympathetic performer. Hardly so music could give reactions so much pleasure as that which was so rendered as to present a reflex-

son of the composer's mind. Take Schumann's music. Whatever facts he might have as an artist in putting his works together, he always communicated the feelings with which he wrote. So it was, too, with Schubert; and therefore it seemed that Dr. Harnack really spent his own argument for the study of the cause in the subject itself, because the ideas he expressed seemed to be against it. Many of them had heard pieces of music not really very excellent made most interesting by a fine performer, which made it clear that if the performer gave greater feeling than was expressed by the composer the performer could, if the music permitted, give more than appeared in the music itself. He would strongly recommend anybody who wanted to deal with this subject of esthetics to set about it in a philosophical way, and to begin with the study of philosophy, in order to judge between the two courses in which they were led—now set of people saying that beauty is not come from God, the others that it comes from men alone, because that was really what it amounted to—and unless they so studied the subject they would find they could not do anything with it. The authors so named up these ideas that, before people could get any pleasure from such work, they would find that the subject must be placed on a purely philosophic basis. A good book on the subject was very much wanted indeed.

Mr. FROST, with regard to the remarks of Dr. Scherer, as to the indefinite character and expression of music, recalled a very apt saying of Richard Wagner's, in one of his works, that "just where speech ends music begins."

Mr. BENJAMINSON: It was said before Wagner's time: he simply quoted the phrase.

Mr. FROST believed that was so, and said he thought the quotation appeared in his "Music of the Future." Nothing appeared more absurd than the style of criticism, if it could be called so—perhaps it should rather be called the style of rhapsodizing—which strove to attach definite ideas to every composition except where the music was allied to words, or in the case of such a work as Beethoven's "Pastoral Symphony," in which a guide was given as to what the music was intended to be, and was more truly a description of the responses than could be conveyed by a painting. He had been brought a good deal in contact with musical literature, and had at the present time a book awaiting review dealing with some standard works in that stupid diaphanous manner. It was in fact the recollection of that book which brought the matter vividly before his mind when he heard Dr. Scherer's remark. Unfortunately that book was by no means a solitary instance, and a protest ought to be made against that sort of thing passing for criticism at all.

Mr. BENJAMINSON said that any remarks he had made most

be received as having been advanced by him in a tentative way. It seemed to him that musical philosophy, to be complete, must regard both the emotional and the formal sides of art. As Wilson had said, musical impressions might be compared to water which escaped from the hand when an attempt was made to hold it, but the existence of the water could not be denied. It was difficult to attempt to minutely classify and arrange the effects of music, but however difficult it might be to do so, there were many sorts and styles of music between the joyful and the sad which could be arranged in a definite manner.

The CHAIRMAN, after Dr. Stainer's very elaborate remarks, would only give a few explanations, perhaps necessitated by the use, in one of the writers referred to, of the German term *reine Anschauung*.

Mr. BARAGRETT said the phrase was one most difficult to render in English, but he had translated it as "pure contemplation."

The CHAIRMAN said the phrase comprised the subject in a nutshell, and it might very well be rendered as abstract consideration or contemplation. The term, as used by Schöller and other art philosophers, meant the abstract contemplation of works of art; and he thought, as the whole subject had been put forward by Hanslick, that it should be dealt with by regarding works of art as pure abstractions, not dealing with the emotions at all. Reference had been made by the reader of the paper to the similarity of effect produced upon, say two people, by a cantata of Bach or a symphony of Beethoven.

Mr. BARAGRETT explained that this remark applied to music generally, with regard to the fact that the same piece would produce varied effects upon different minds.

The CHAIRMAN said the matter was one of training. Take a boy of sixteen, who had not been trained to appreciate high works of art; he might prefer, to a grand posthumous work of Beethoven, some jolly music of Offenbach. There could be no doubt that productions like a posthumous work of Beethoven, or a cantata of Bach, required a very different preparation for understanding them to that necessary for appreciating a jollicking march or a waltz. It was there, in reference to the emotional effect of music, that he thought Dr. Hanslick was wrong.

Mr. DUNAGRETT explained that Dr. Hanslick's idea was that the emotion of the average and that of the emotional musician of the present day were much of the same character, and that in reference to beauty in art we should throw aside the idea of emotion altogether.

The CHAIRMAN mentioned that he had lately seen the report of a Civil Commissioner to the Colonial Office on some native tribes in South America, in which reference was made to their

music. A melody there given, it was said, had such an effect upon them, that as soon as it was heard in or about one of their villages it would bring all the people together. In fact the melody appeared to be their song of praise, but he had looked it through, and really there was neither melody nor life in it; and if that was the system of Dr. Hanslick for deciding the beauty of music, probably no more time need be spent in discussing it. In the main, he fully agreed with Dr. Stainer, and he could not understand why the art-writer could have such difficulty in construing the works of a composer, because surely they must participate to some extent in the gift which he himself possessed. He would in this connection refer to Turner's saying, that genius was nothing without "work, work, work," and suggest that it was the combination of genius and work which made great composers. To refrain from applying that principle to such composers as Mendelssohn, Bach, or Beethoven might be very well for people who know nothing about it, but those who had worked in however humble a way would know that the musician could do but little with either alone, but must possess the capacity for both combined. In conclusion, he proposed a vote of thanks for the excellent paper which had been read by Mr. Breakspere.

The vote was recorded and carried unanimously, and with a similar vote to the Chairman the meeting adjourned.

MARCH 1, 1886.

C. K. SALAMAN, Esq., Vice-President,
IN THE CHAIR.

ON QUALITY OF TONE IN WIND INSTRUMENTS.

By D. J. HANLEY, Esq.

It may be in the remembrance of some here present, that about two years ago I had the honour of bringing before the Musical Association a short paper on brass wind instruments, in which I endeavoured to demonstrate the effects produced by variations in the forms of tubes upon the positions of the nodes of sound-waves generated in such tubes, and consequently upon the sequence of proper tones and correctness of intonation. The summary of the matter then brought forward was this: that a brass instrument is a tube closed at one end, of such a form as to give the series of intervals producible from an open, and not from a closed cylindrical tube, such forms being neither a common cone, nor a conic frustum combined with cylindrical tube. At the conclusion, attention was drawn to the fact that quality of tone was intimately associated with the points then under consideration; and it is to this subject of quality of tone that I have ventured to ask your attention this afternoon.

There are two popular opinions on this subject which we may examine at once, to clear the ground, as it were, and such examination will be found to establish only negative facts. One of these opinions is, that quality of tone depends greatly upon the material of which an instrument is made, and the other is, that tone, as regards its production at all, is in a large measure due to the rush of air through the instrument. Experiments have been at various times made, tending to show that material has little or nothing to do with the matter, and one such I can now repeat. (*Paper held compared with one of copper.*)

With regard to the second opinion referred to, a little consideration will show that the forward motion of air is, even in some of the most characteristic instruments, exceedingly slow. Take, for instance, the powerful tone delivered from the bell of a contra-bass saxhorn or hornbasson; the forward motion of air in a bell four inches diameter would be only from about

one to three inches per second. Any instrument which the mere passage of the air may have, may be reduced to zero by making suitable arrangements to sound the instrument without passing any air through it. Across the top of this mouth-piece, just within the rim, a diaphragm of goldbeater's skin is stretched, so as to exclude from the instrument all air issuing from the lips. The breath finds an escape by means of a small tube communicating with the mouth-piece between the lips and the diaphragm.

(*Experiment.*—*Bagle, with diaphragm mouth-piece.*) All the proper tones of the bagle can be thus sounded without their pitch being altered, and although the intensity is small, owing to the loss of force through the escapement tube, yet the quality is fairly preserved. Leaving out of question then for the present, as not greatly influencing the matter, the possible effects of material and the passage of the air, we are reduced to the consideration of the subject under two broad divisions:—

1st. The form of vibration given by the lips, reed, or other body originating the wave motion; and

2nd. The form of the resonator: its power of reinforcing, in equal or varying degree, the different simple vibrations into which the compound tone produced by the vibrator may be analysed.

1st Division.—*Form of vibration.* A simple pendular vibration producing a pure or simple tone is an exceedingly difficult thing to get; a common tuning-fork does not give it, and it may be doubted whether it is obtained from any material instrument.

(*Experiment.*—*Second partial given by fork of 150 vibrations.*) The vibrations produced by all the ordinary sources of musical sound are compound pendular vibrations; the mathematical theory held with regard to them being known as Fourier's theorem, which is thus expressed by Helmholtz: "Any given regular periodic form of vibration can always be produced by the addition of simple vibrations, having vibrational numbers which are once, twice, three, four times, &c., as great as the vibrational number of the given motion." Practically as well as theoretically the variety of vibrational forms is infinite: probably the lips of no two players vibrate in exactly the same way, and to judge from the difficulty reed-instrument players experience in finding reeds to their taste, the same is doubtless true of these vibrators.

2nd Division.—*Form of resonator.* To understand clearly the varying effects of resonance, it is necessary to bear in mind the difference, in their power of entering into sympathetic vibration, between a light and highly elastic body such as air, and a heavy body such as a tuning-fork. A mass of air can enter into sympathetic vibration with vibrations very far removed in pitch from its proper tone or tones, and owing

to this power we have the condition of partial resonance constantly occurring; in a cylindrical tube this partial resonance, or resonance of varying intensity, may be shown by merely varying the length. (*Experiment 1322 first*.) But it may also be brought about by altering the forms of resonators, so that the result, when the resonator is applied to reinforce a compound tone, is a disturbance of the proportionate intensity between the different partials of that tone.

(*Experiment.*—The note c_{128} sounded by the lips on four resonators of different forms, viz.: a pear-shaped paraffine lamp-glass, a cone frustum, a bagle, and a cylindrical tube.)

The tones produced from these four resonators may be analysed by means of small resonators tuned to the partial tones, the exciting of sympathetic vibration in them being facilitated by the vibration of a head hung against the diaphragm of each. Tuning one of these diaphragm resonators to c_{128} , the second partial of the note sounded, we find that the head is not affected by the lamp-glass or the cylindrical tube, but when the bagle is sounded it is violently agitated, and it is moderately agitated by the cone frustum. Neither the lamp-glass nor the cylindrical tube has c_{128} as a proper tone even approximately, and therefore neither can give resonance to c_{128} when it occurs as the second partial of c_{64} , but the bagle has a perfect resonance to c_{128} , and the frustum a moderately good resonance; its two first proper tones being C' and C_2F' . Modifying the form of the frustum until its second proper tone is truly c_{128} , and then repeating the experiment, we find that the agitation of the head is greatly increased. The converse of this last experiment may also be shown on the bagle, by enlarging the instrument at one of the nodes of c_{128} , thereby flattening that note. Its resonance to the second partial of c_{64} is now greatly diminished. By these two last experiments we find that a slight alteration in the pitch of one note greatly affects the quality of the note as others lower—we get an example of the effect of partial resonance, and an evidence of the relationship between intonation and quality.

Without altering the form of an instrument, it is possible to modify the quality of any particular note for experimental purposes, if the positions of the nodes of that note are known. In the bagle metal diaphragms can be inserted at the nodes of its fourth proper tone c_{128} , and because the nodes are positions where the air is at rest, the power of the instrument to give this particular note is not destroyed by these diaphragms, but every other note is prevented from sounding. (*Experiment.*—Note sounded on bagle divided by numerous metal diaphragms into three equal segments and one half-segment.)

Such rough expedients, as have been just now considered,

are however, although useful for experiment, not practically available when more than one note is required from a tube or instrument; the only alterations of form admissible are such as vary the resonance without interfering, at least to any appreciable extent, with accuracy of intonation. Three brass instruments, the brass trombone, the euphonium, and the French horn, may be taken for examination and comparison, and I will endeavour to show the existence of some of the higher partial tones, in the same note sounded from each, by the influence of these partials on a set of monochords.

(Experiment.—Partial tones by each when *B♭* is sounded.)

One wind instrument may be made to approach another in quality of tone by varying the manner of blowing, and therefore it is not easy to fix exact data as to the number and strength of partials; yet the average results are sufficiently plain.

SCALE OF PARTIALS.

Instrument	Note	No. of vibrations	Partial tones heard.
<i>B♭</i> Trombone	<i>B♭</i>	66	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
	<i>E♭</i>	132	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
	<i>F</i>	198	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.
<i>E♭</i> Euphonium	<i>B♭</i>	66	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
	<i>E♭</i>	132	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
	<i>F</i>	198	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.
F French Horn	<i>B♭</i>	66	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
	<i>E♭</i>	132	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
	<i>F</i>	198	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.
<i>B♭</i> Cornet	<i>E♭</i>	132	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
Clarinet	—	132	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

As regards brass instruments of different characters, the chief points influencing the tone are the general form of the instrument (understanding by this the proportions of the column of air, and not the shape into which the instrument may be bent up for the convenience of the player), the extent of the flaring of the bell, and the form of the mouth-piece. As an illustration of the first of these conditions, the trombone may be compared with the euphonium; the tubing of the trombone is cylindrical for about two-thirds of its length from the mouth-piece, but the euphonium opens with gradually in-

creasing curvature from the mouth-piece to the rim of the bell. Cylindrical tubing has the power of maintaining the compound form of vibration originated by the lips, and apparently not only of maintaining, but of intensifying and augmenting the complex character of the sound-wave. The partial tones in the pedal note of the trombone are so powerful that they determine the pitch of the note. The true prime or lowest proper tone of the instrument is considerably lower than the pedal note as sounded; and therefore the resonance of the instrument to the lowest partial or prime of the note actually produced is imperfect. (*Experiment repeated.—Varying resonances.*)

In instruments such as the euphonium, in which the diameter rapidly increases, there is not the same maintenance of the strength of the high partial tones as the sound-waves pass from the mouth-piece to the bell. The extent of the flaring of the bell is also an important factor in determining the quality; the bell flange may be increased in size to a considerable degree without altering the pitch of an instrument; but such increase has a marked effect on the quality of tone, greatly reducing the force of the upper partials. This may be illustrated by changing the bell end of a bugle for a bell with much wider flange, more like that of a French horn; comparing the two, it will be noticed that the change in quality of tone is very marked. (*Experiment.*)

The form of the cup of the mouth-piece varies for different instruments, from that of a long deep conical funnel to that of a comparatively shallow well-rounded cup; the first form representing the French horn mouth-piece, and the second the mouth-piece for instruments of brilliant tone, as the trumpet and trombone; those for cornets, euphonium, and bugles are of an intermediate character. It is manifest that a shallow-cupped mouth-piece favours the production of high upper partials, and it appears to me that the form of the mouth-piece modifies the initial pressure of the air at the commencement of the sound-wave. By the insertion of small water-pressure gauges in the cups of different mouth-pieces I have found that the initial pressure, or mean pressure of air caused by blowing, is distinctly measurable, and varies in different instruments. That the influence of such an initial pressure is to develop upper partials, appears to me to be shown by playing a

* The total length of the $\text{B}\flat$ trombone (Army pitch) is about 44 inches, of which the mouth-piece and cylindrical tube are $1\frac{1}{2}$, and the bell 40. The wave length of the pedal $\text{B}\flat$ is 52 inches, and the cylindrical tube alone in the trombone is therefore 10 inches longer than the quarter wave length $52 - 42 = 10$. Taking into consideration the widening of the bell, the lowest proper tone or true partial is probably about F_1 , and the series of proper tones have therefore, the relationship

	$\frac{27}{1}$	$\frac{81}{2}$	$\frac{243}{4}$	$\frac{729}{8}$	$\frac{2187}{16}$	$\frac{6759}{32}$	$\frac{20523}{64}$	$\frac{61569}{128}$
instead of	1	2	3	4	5	6	7	8

vibrating tining-fork as a sound-board. Touching the board very lightly with the fork the prime tone is well heard, but on pressing the fork down to the board the tone appears to jump up an octave; at least, the second partial is heard with great distinctness. (*Experiment.—Fork 196 as sound-board.*)

To enter at all fully into the different conditions on which quality of tone in wood instruments depends would unduly lengthen out this paper, but a few remarks may perhaps be of interest. In flutes the strength of the partials diminishes rapidly as their vibrational numbers increase. In the D (low) of the concert flute, however, the seventh partial is discernible; in the A, a fifth higher, I found that the fifth partial was the highest audible. Clarinets, it has been generally held, I believe, have only the odd numbered partials, but this opinion, although I held it myself until within the last year, I will now venture to dispute. It is true that only the uneven-numbered notes of the harmonic series can be sounded as primes on these instruments; but this is not in itself a proof that there is absolutely no resonance to the even-numbered notes when they occur as partials. The instrument is not strictly a cylindrical tube; the slight enlargement of the bell, and the modifications of form caused by the side-holes, must be taken into account.

PARTIALS—B♭ CLARINETS.

Part-	1	2	3	4	5	6	7	8-8c
C_2 = 132	<i>vvvvvv</i>	<i>Just discernible</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>
C_3 = 264	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>
C_4 = 528	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>	<i>vvvvvv</i>

(*Experiment.—*Partial—3rd and 4th—shown to exist in *d* of *B♭ clarinet*.)

Returning for a minute to the question of influence of material, it is possible, although difficult of proof, that in the clarinet the wood takes up and reinforces the vibrations of the reed which is bound down to it, in the same way that a resonance box takes up the vibrations of a tuning-fork; and that different woods act differently in this respect. In brass instruments it will sometimes occur that a portion of the instrument will enter into sympathetic vibration with a certain note, or with high partials connected to various notes. This is certainly a result of the elasticity of the metal, but is an accidental blemish, to be avoided, rather than anything good.

There is a consideration arising out of the class of experiments with which we have been occupied, that I would venture to put before you for criticism or confirmation, as the case may be. We have found confirmation of the fact that the variety in the number of partials, and hence in quality of tone, is greatest in notes of low pitch. Further, different instruments, so far as my own experience serves me, lose some of their individuality of character when exceedingly high notes are sounded on them: for instance, very high notes on the viola, the clarinet, and the flute, do not differ from each other in quality near so much as do low notes on the same instruments. Is this to be attributed altogether to the non-production of a great variety of partial tones in notes of high pitch, or, in part, to the fact of our range of hearing being limited? It appears to me to follow as a necessary corollary from the fact of limit of range upward, that all tones which lie just within that limit must produce the same effect upon the ear, whatever their wave-form, and that even different tones, which lie well within it, may be somewhat modified in their diversity in consequence. Furthermore, as this extreme limit is not the same in all ears, it would follow that different hearers would derive different impressions from the same note. Suppose a high tone composed of first, second, and third partials to be sounding, one hearer, whose range of hearing just passed the third partial, would hear the compound tone: another, whose limit of hearing was an octave lower, would hear only the prime, and thus receive a totally different impression, and would give a different opinion as to the quality of the note. This supposititious case may perhaps serve to explain my meaning.

In these experiments I have endeavoured to bring forward evidence in support of Helmholtz's theory of compound tones, the practical outcome of which for musicians, as is well known, is that every note sounded on instruments in general use is in reality a chord comprising many tones. In attempting to get a stage beyond vague generalities of opinion as to this or that condition producing this or that result, I have found nothing which in any way militates against that theory, but only more and more convincing proof of the truth and force of it. I am fully conscious that any analysis of tone such as has been shown this afternoon is at the best but rough, and can only be considered as an approximation, and that the trained ear of the musician will detect differences which other instruments than the ear cannot do. Notwithstanding this, however, as we receive that every tint and tone which the eye can detect is either simple or is compounded of a small number of prisms, so also, I think, we may accept the daily accumulating evidence which points to the ear receiving its impressions in a similar way.

I fear I may have worried you with a mass of technical detail, but it appeared to me that for the investigation of this subject such details were necessary; otherwise we would have been driven back upon vague conjecture.

DISCUSSION.

The CHAIRMAN having invited remarks on the paper,

Mr. ARTHUR J. ELLIS said that one satisfactory result of the excellent paper just read, and of the experiments given by Mr. Huskley, was to demonstrate that quality of tone depended upon the presence or absence and varying strength of the different partials. That fact had been put before them in an unmistakable manner by the visible vibrations of the beads against the resonators, as shown on the screen. One of the members of the Association, who was not present, maintained the theory that the resonators themselves generated these tones, and that they were not generated independently of them. In spite of the very satisfactory results of the lecture itself, it was especially interesting to him (Mr. Ellis) with regard to experiments he had been making last month at South Kensington, by which he had been able to demonstrate the existence of partial tones without the aid of resonators. He had done so with the help of Appunn's tonometers, one of which contained reeds making from 225 to 8 vibrations in a second. Of course the 8 vibrations were not heard at all, but the beating of the upper partials in this reed could be distinguished, so that he had been able, by judging from those upper partials, to determine approximately the pitch of even the 8 vibrations in a second. Down to as low even as 16 vibrations in a second, he had been able to get the twentieth and thirtieth partial tones so strongly that there was no difficulty whatever in counting the number of beats they made with forks. In fact, he had ascertained the pitch of every one of these low reeds in that way; and that also served to show an objective existence independently of any resonator, because it was only when the pitch of the fork was anything near to those partial tones that beats could ensue. He was not aware whether Mr. Huskley had tried it, but it would be an interesting experiment to try the effect in other instruments, though possibly the beats could not be exactly counted, because the blast could not be maintained on any other instruments with the same strength or for the same length of time as upon Appunn's. But a pretty constant blast, even in the low tones, could be obtained in the other instruments; and it was in fact easy to do so if the attempt were not made below 64 vibrations in a

second. When the tones were so low as $8\frac{1}{2}$ vibrations in a second, the beating of the adjacent partials (such as 8 and 9, 22 and 23, 23 and 24, &c.) could be heard all the way up. That had the effect of producing a rattling sound, and taking, for instance, the strongest of Appann's reeds at South Kensington, it was dreadfully unpleasant to hear them sounded at all. If these partials were present in anything like the same strength in higher notes, they would be unendurable. It was only when the partials were comparatively high that they gave that peculiar brilliancy of tone which distinguished some instruments, and it was of course very desirable, if mellowness of tone were desired, to find some means of lessening the effect of those upper partials—such, for instance, as the bell of the French horn, the effect of which had been shown by Mr. Mackley, by the substitution of the larger French horn-shaped bell in place of the ordinary English bell. He did not know how far that idea might be carried out in practice, but it might be found possible to calculate the lower of those upper partials, and to produce as consequence a quality of tone more like that of the French horn though not at all the same. By that means a new instrument might in fact be produced, and one which people would probably like very much when they heard it, although adding anything to which they were accustomed. The trombone was well known for the power of its upper partials, but those upper partials, when belonging to a very high note, would be necessarily so acute that ears could not bear them. Taking a pitch of 1022, which was not a very high note, and taking merely the twelfth or double octave of that which was only 3 or 4 times 1022, a very high note indeed was produced, and one difficult to appreciate, though in fact notes might be produced a great deal higher, as any one could hear for themselves at South Kensington by examining Appann's tuning-forks, which went up to 42,000 in the second. He had heard and produced them, in fact, himself. So that it was not exactly true that the ear was not sensitive to these extraordinarily high tones, but it appeared to be more likely that the high partials were generated with such extreme weakness that they did not produce a sensible effect on the drumskin of the ear. The consequence, as Mr. Mackley had pointed out, was that in the higher notes the distinctive quality of the tone of an instrument was very much missed, while, on the contrary, it came out exceedingly well in the lower notes. It had, perhaps, not been much observed that, in ordinary speaking, that which differentiates the sound of one vowel from another was more especially the quality of the high partials in the tones of the voice. There was thereby caused a great deal of loss in ordinary speaking by the want of differentiation in the tones, so that, when the hearer was at a distance from the speaker, the brass was heard

but not the partial tones, and hence the attention was not drawn. That was still more the case in recording the consonants. At any considerable distance the consonants were not heard at all, and, therefore, what the speaker was saying could not be distinguished. That showed, in fact, that a great many persons did not pronounce consonants at all plainly. These matters were also very important in their bearing upon the relation between the different speech sounds, a subject which he had been lately studying. He hoped Mr. Blaikley would go on with his experiments, which he considered were extremely valuable. He was much struck with the experiment of blocking up the tube of the bugle in four different places, so that no wind from the mouth could get into the tube at all, showing that the effect was produced merely by the agitation of the air conducted through those obstacles, the vibration being conducted from one side to the other, and the air itself not being in communication throughout the tube. That was a very valuable experiment, and it would serve to explain many of the results given by organ pipes, which in themselves would be exceedingly difficult to explain. He hoped that as Mr. Blaikley was at last dealing with organ pipes in these resonating tubes, he would direct his attention to the extraordinary variety of quality of tone obtainable from the non-cylindrical and other curious artificial forms of tubes, such as had been used in the experiments. The parallel chimney-glass especially attracted him of one form of those organ pipes very much. By its means a very peculiar effect had been produced. It would be very desirable indeed if some means could be found of measuring the relative intensity of the tones with more distinctness than could be obtained from the mere vibration of membranes as shown upon the screen. That effect must in fact be considered more as an interesting lecture experiment than as one conducing to the real amount of present scientific knowledge of the relative intensity of the partials. It was well known to be exceedingly difficult to measure in any respect the relative intensity of two sounds. He did not think there was any satisfactory way of doing it at all. Another point, with which he had been much struck, was the way in which Mr. Blaikley had established the existence in the clarinet, for instance, of the even partials. They certainly existed there, but whether they were produced by the motion of the air in the instrument, or from the communication of the motion of the reed to the sides of the tube, was a point to be farther investigated; and he hoped Mr. Blaikley would investigate it, because it was a very important point in reference to Helmholtz's theories. In conclusion, he expressed himself much gratified with what he had seen and heard in the interesting paper and experiments of Mr. Blaikley.

Professor GUYTON ADAMS was especially interested in one

matter which had already been mentioned by Mr. Ellis, namely, the division of the tube of the bugle into a number of separate closed pipes—for that was really the result of it—each of which would sound the note given at the end of the tube, showing that the vibrations were communicated from one closed pipe to the other. He would ask Mr. Blakley to inform them what was the thickness of the film, or plate, which he placed between the different portions of the tube, and whether he thought the vibrations were communicated through the discs placed in the way of the blast, or whether they were communicated by means of the pipe itself. The division of the pipe into two cut out the odd harmonics of the original note, leaving only the even ones. Then, dividing it again, any special set of harmonics could be readily cut out by adding to the number of discs inserted. He was much interested in what had been said about the clarinet. Sir Charles Wheatstone had established a long time ago, or thought he had established, the fact that in the clarinet only the odd harmonics were produced, and that, in fact, it corresponded to a pipe closed at one end. The clarinet itself only differed from the closed pipe by having the key-holes arranged along it. In Mr. Blakley's experiments there were other harmonics perceptible. The resonators were certainly beating, but it might be a question whether the disturbance in some of them was not due to the combination of other resonators near to it disturbing the air, and so consequently producing a disturbance among the resonators themselves. From a cylindrical tube with the same mouth-piece it ought to be possible to produce all the harmonics which were due to the instrument itself, but that would not be the case if the harmonics did not belong to the instrument regarded as an open pipe. It was a very interesting point for consideration whether the harmonics really belonged to the pipe or not.

Mr. ELLIS pointed out that there was also a difference made by the action of the bell-end itself, as had been shown by the experiments.

Mr. BLAKLEY, in reply to the remarks which had been made, alluded to Mr. Ellis's observation with regard to the possibility of producing instruments with tones approximating to those of the French horn, and not as brilliant as those of trombones such as were used in military bands when it was desired to produce softness of tone. Bombardons with large bells were gradually coming into use in orchestras, and the instruments were found to give an almost organ-like purity of tone. With regard to the over-blown partials existing in the tone of the clarinet, which, being the nearest point, was possibly the most interesting, it must be remembered that the clarinet is not simply a cylindrical tube, but it has a decided opening out at the bell. Thus, there is

a slight, but not good, resonance to the even partials of some notes, and the impossibility of sounding any one of such partials as a *prime* may arise from the extreme flexibility of the reed through which it would be constrained to take up the vibrations of the note nearest in pitch to which the instrument gave a perfect resonance. That was probably the real explanation of the difficulty. (Experiments repeated to prove that the heads on the diaphragm resonators were not in motion by the partial tones actually sounding, and not through the resonators generating the tones themselves.) You can most distinctly hear the fourth, fifth, and sixth partial tones. Then with regard to the bugle being affected by the insertion of the diaphragm, it would be observed that the nodes were not coincident for every second tone, they varied in every proper tone, and there was no coincidence between the nodes of any of the tones. In conclusion, he thanked the meeting for the attention and interest they had shown in the paper.

The Chairman asked how the passage of the sound through the tube closed by the diaphragm could be accounted for?

Mr. Bramley said it was by the agitation of the air simply communicated from one side of the diaphragm to the other. The diaphragms were perhaps only about one-fiftieth of an inch thick, but they were quite solid.

A vote of thanks was unanimously awarded to Mr. Bramley for his paper.

Ann. 5, 1846

REV. THOMAS HELMORE,
IN THE CHAIR.

REMINISCENCES OF FREDRICK CHOPIN.

By G. A. OSBORN, Esq.

THE paper on "Berlioz," which I had the honour of reading at one of our meetings last session, having been so kindly received by the members of the Musical Association, I have been induced to give one on "Chopin," with whom, as with Berlioz, I was intimately acquainted during my stay in Paris, where I resided for many years. Everything connected with Chopin has, at the present day, much more than ordinary interest. His works being so frequently presented to the public by performers of different nationalities, capable not only of mastering with ease the mechanical difficulties with which they abound, but also his interpretations being imbued with the poetic spirit which pervades his compositions, they are in every case well received; for no one who does not thoroughly appreciate them can hope to interest an audience. In this short sketch I intend presenting Chopin to you under a three-fold aspect—his appearance, character, and mode of life, prefaceing my remarks with a short account of his early years. In a village near Warsaw Chopin was born, according to Kozłowski, on the first of March, 1809, and not 1810, as inscribed on his monument at Père la Chaise. He had undoubtedly a delicate constitution, and was often implored by a loving mother and sisters to wrap up carefully, a request not invariably heeded to, as we all know by experience; still it is asserted by Wilhelm von Kallberg, who knew him well, that till manhood he was only ill once, and then from a cold. Gross exaggerations have certainly been current respecting his health, and Goethe says most truly, "People believe the truth so little because it is so simple." In his earliest years Chopin was so sensitive to music, and showed such a decided love for the piano, that his parents confided him to the care of Zwick, an accomplished pupil of Sebastian Bach. His progress was rapid, so much so that before he attained his sixth year he played a concerto in public, stored in a handsome jacket and collar. Being asked by his mother, after a loving embrace, "What the public liked best?" he naively replied, "Oh,

marina, everybody looked only at my collar." His success, however, at this concert was so great, that he at once became a great favourite, and was received by the flower of the aristocracy. It is generally supposed that the first idea of future greatness was suggested by the present of a watch given him in 1820 by Madame Catalani, which bore the following inscription: "Madame Catalani to Frédéric Chopin, aged 20 years." To overcome the technical difficulties of the piano he laboured incessantly and perseveringly. He delighted in extended *seppia* chords, and to render them easy, he manufactured a mechanical contrivance which he kept between his fingers during the night. Those who have played his *Eleventh Study in E flat* can fully understand the advantage of having supple fingers with increased space between them.

Chopin had extraordinary vivacity of temperament. The tricks he played on his schoolfellows were innumerable, and he was considered by Albert Piusceli, the eminent dramatic artist, to be a born actor, on account of his presence of mind, excellent declamation, and capacity for rapid facial changes. In his bed-room he had a piano, and frequently during the night he would get up and play some passing thought, to the astonishment of the servants, who, not understanding him, would say, with a shake of the head, "Ah! the poor young gentleman's mind is affected."

With Elsner, who first discovered Chopin's creative originality, he formed counterpoint, and with him he was united till death in the bonds of loving friendship. To those who remarked to Elsner that his pupil did not adhere to the customary rules of music, but followed his own fancy, he would say, "Leave him alone, he does not follow the common way because his talents are uncommon; he does not adhere to the old method because he has one of his own, and his works will reveal an originality hitherto unknown." Many a master would have quenched his youthful aspirations. The Macozans have an intense love for music, and a distinguished Polish writer, Julian Klaczko, says, "The love of song characterises the Silesians above all other races; the noblest peasant could be allied to the end of the world by his national songs." Chopin had a predilection for them, and we trace in his music much of their influence. He often wondered who was the creator of those expansive melodies, originated in the cottage by composers whose names will always remain unknown. In college his easy charming character made him beloved by his fellow-students, many of whom belonged to the first Polish nobility, who frequently had him at their guest, and with whom he acquired the manners of a cavalier, which he retained through life. When he was fifteen he had all the grace of youth combined with the gravity of a more matured age.

His physiognomy was charming, and the absence of muscular development in his frail body rendered him at all times an object of the warmest interest. With his natural grace he had the gift of pleasing even those with whom he was but slightly acquainted. The culture of his mind and the originality of his conversation secured for him the attention of the most cultivated men. Chopin was not above middle height. His complexion was delicately transparent; his nose good-natured; his eyes dark brown, more distended than persic; his nose Roman, but slightly aquiline; his voice musical, but subdued.

As soon as his college course was terminated, it was deemed advisable that he should travel and become acquainted with celebrated artists, and hear the best performance of the great classical works. In his letters to his parents and friends we have abundant proof of the pleasure he enjoyed when hearing such works, and his admiration of many artists whose friendship he enjoyed. In one of his amusing letters the relations being received by the master of the house, with many compliments, into a room where a number of ladies were sitting at eight large tables. No finishing of diamonds met his gaze, but the more modest glitter of a host of steel knitting needles, which moved conscientiously in the hands of these industrious ladies. The number of ladies and of needles was so large, that if the ladies had purposed an attack upon the gentleman the latter would have been in a sorry plight; the only resource left them would have been to have made weapons of their spectacles, of which there were as many as there were bald heads. Chopin was at times very gay, and—as he says of himself—sated with a spirit of mischief. Once, in a sedan chair, which he called a queer, comfortable box, he had a great desire to creep through the bottom of it.

Perhaps none of my hearers know anything of the pleasure of a sedan chair, so I shall relate my personal experience of such mode of conveyance. Before I left Ireland, when quite a lad, having to play with an amateur violinist at a party, I went there in a sedan chair, the night being stormy and wet. I had not gone far when, standing up to arrange my coat, the bottom of the chair—which I suppose was not very firm at the time—gave way, and I had to run with my two bearers, who were scotting at a good pace. In vain I tried to make them hear, but to no purpose; and, after a run through several streets, I arrived at my destination covered with mud, and with a very unprepossessing appearance. I wanted to return home at once, but my violinist friend—who was the master of the house—objected, and said he would make all right. Taking me to his room, he dressed me in a morning suit six times too big for me, and I was then conducted to the drawing-room, where I was introduced to the

assembled guests in a speech that had a great deal to do with the inclemency of the weather, and a bold assertion on his part that he never saw me look better in his life.

When the revolution broke out in Poland, Chopin was arranging a concert in Vienna, which did not take place. The fact of his being a Pole caused insuperable difficulties, so many being afraid of compromising themselves. He had a great desire to return to his country, and follow the army with a friend. "Take me," he said, "as your drummer." Fortunately he was dissuaded from his warlike purpose, and his friend, who hoped to return a colonel, was killed in action. In a letter to his most intimate friend, Lisztner, he thus writes: "I would not willingly be a burden to my father; were I not afraid of that I should immediately return to Warsaw. I am often in such a mood that I cannot the moment I left my beloved home. I am melancholy; there is not a soul I can unreservedly confide in. I have lost my peace of mind, and only feel happy when I can read your letters or look at my precious ring." This ring was given to him by a young Polish lady of whose he was enamored, and it is of her he speaks when, in the same letter, he asks, "Does she really look so changed? Do you think she was ill? She is of such a sensitive nature that this is not at all unlikely. God forbid she should suffer anything on my account; comfort her, and assure her that as long as my beam beats I shall not cease to adore her. Tell her that after my death my ashes shall be spread beneath her feet."

It is said of Chopin that he disliked the numbers seven and thirteen, and would not undertake anything of importance on a Monday or Friday, such days being considered unlucky in Poland. After some difficulty about his passport he came to Paris, and was delighted with the gay capital. Things had not then quieted down, after the revolution which placed Louis-Philippe on the throne, and parties were politically divided. From all he heard of Kalkbrenner he was anxious to become his pupil, and particularly so after hearing him play. In a letter dated December 6, 1832, he says: "Kalkbrenner's touch is fascinating. The quietness and equality of his playing are indescribable; every note proclaims the master. He is truly a giant who dwarfs all other artists." During several weeks I heard Chopin play frequently, and was questioned by him as to Kalkbrenner's system of teaching, as I had been then his pupil for two years. He wished to place himself under his care, and was much surprised to find me dissuading him from it, saying: "This is strange, indeed, from you."
"Not so," I replied; "I thoroughly value my master, but I am an ordinary mortal; you are not, therefore remain as you are; for should you become his pupil, very little of you will be left. If I mistake not you will become a great artist, and many

of your peculiarities as a player will be imitated even by Kalibrenner's pupils, when they have finished their time with him." To his father and others, whose advice he valued, he communicated his wish, the fortunate result of which was that he named his own master.

In Paris he received an ovation from the masses of Parisian society. A new phase in the poetic sentiment was revealed along with innovation of form, which captivated all who heard him; and the modesty with which he acknowledged applause, enthusiastically bestowed, gained for him an esteem which increased as he became known. Having mastered the technique of music, Chopin could improvise to an unlimited extent on any given theme, producing the most marvellous effects; and those who heard him at such times say that his finest compositions are but a reflex and echo of his improvisations. The great steadiness of his accompaniment, whether with the right or left hand, was truly remarkable, and his playing, thus freed from all trammels, acquired a peculiar charm. Chopin's finest works are to be found in the smallest forms, such as his nocturnes, mazurkas, ballads, and études, which are replete with poetry.

Residing close by Chopin's residence, I was a frequent visitor, and had the advantage of hearing him play his compositions when still in manuscript. Even when published he would introduce *Andantes*, always varying them when repeated with new introductions, according to the fancy of the moment. In brevier passages he would sing out as loud as he could, occasionally exclaiming, "This will require force and dash," evidently having Liszt in his mind. Although there is a strongly marked rhythm in Chopin's polkas, mazurkas, and waltzes, they are unlike all compositions with similar titles that have preceded or followed them, and, indeed, it would be difficult to imitate them without plagiarisms. All his compositions seem to be suggested by thoughts of his country, which present many phases of different character, so remarkable in nations struggling for freedom. Chopin will always be considered a poet essentially Polish, for in all his compositions he gives expression to the national feeling. Speaking of Hector Hastings, the music publisher, he says: "He is a shrewd man trying in a certain way to induce me to let him have my compositions gratis. Perhaps he thinks that by treating my works as 'bagatelles' I shall be only too glad to get them published, but the time for gratuitous work is over with me; now it is 'pay.'"

The concert which he gave on the 6th of February, 1838, was financially a failure. It was only attended by well-to-do Poles; scarcely any of the paying French public were present. He played his *P. minor Concerto*, other pieces also, and a *Polonaise* for two pianos with Kalibrenner, the accompani-

ments being played on other pianos by Hiller, Osborne, Starzky, and Sewinsky. Many friends used to consult him for the financial failure, telling him to wait patiently for better days: but he wished to return to Warsaw; he yearned for his home and felt deeply for his country. On the very day that he was preparing for his departure he met Prince Valentine Radziwiłł, who persuaded him to go that evening to a party at Rothschild's. That was the turning point in his career. He went, and played so marvelously, and received so many compliments and applications for lessons, that all seemed now changed to him by magic. There was no longer any need of assistance from his parents, so he at once relinquished the idea of returning to Warsaw. Chopin was always in good spirits when with Hiller. Those who had the privilege of attending Hiller's soirées had the advantage not only of hearing some of his own exquisite compositions, but also those charming gems of his Polish friend, played by the composer. Being now freed from much anxiety, Chopin's wounds returned, and he was the life and soul of parties, especially those where he met his artist friends. One evening, at one of Hiller's receptions, which were much sought after, he was asked to play, when he proposed Hummel's Sonata in A-flat for two performers. By previous arrangement I was to play the bass. We had gone through but a few bars when there was a rush to the piano and general laughter. The cause of this was the pronunciation of Moscheles and Paganini, the countesses and members of whom we were considered to have initiated to the satisfaction of all present, as evinced by the applause we received. During Mendelssohn's visit to Paris he frequently dined at a restaurant with Hiller, Chopin, and myself, each ordering the dinner in turn. One evening at dessert the conversation turned on authors and their manuscripts, which was very animated. When ready to leave, it being my turn to pay the bill, I called the waiter, and instead of asking for *le note à payer*, I said, "*Garçon, apportez moi votre manuscrit*," which seemed to tickle the fancy of those present, but especially of Chopin, who was much amused at the pronunciation. He was fond of relating observations overheard by him on himself, especially if they were unfavourable. One of the remarks was, "That young man has a light touch, but he can't compose." Chopin never imitated other composers. Schumann speaks highly of his Concertos in E and F minor, making merry over his opponents, whom he humorously likened to the French in the time of Louis-Philippe refusing to recognise the legitimate Duke of Modena as king, because he ascended the throne by a revolution.

Schumann did much to popularise Chopin in Germany, pronouncing him at once an unassailable genius. In a letter to Heinrich Dorn, he says: "The day before yesterday, just

as I had received your letter and was about to answer it, who should walk in but Chopin. This was a great pleasure to me, and we spent a delightful day together. The way he sits down to the piano is exceedingly impressive. You would be very pleased with his playing. Imagine to yourself perfection unconscious of its own merit."

Here is the opinion of Mendelssohn, in 1835: "I am a sincere admirer of Chopin's originality. He produces the newest and most attractive pianoforte works: but, personally, I object to his artificial and often forced modulations: my fingers stick and stumble at such passages, and, practice them as I may, I never play them freely." Six years later, in a letter from Paris, he thus writes: "Chopin's appearance corresponds exactly with his music—both are delicate and fanciful. The *ad libitum*, which with his interpreters degenerates into bad time, is, in his own hands, the most charming originality of execution; the harsh and dilettante-like modulations, which I could never get over when playing his compositions, ceased to offend when his delicate filigree fingers glided over them. He is quite unique in the pianistic world." In a letter to his sister, Mendelssohn thus speaks of Chopin: "There is something so thoroughly original and manly about his pianoforte-playing, that he may be called a truly perfect virtuoso; and, as I love perfection in any form, I spent a most agreeable day with him. I was very glad to be once more with a thorough musician, not with those half-virtuosos and half-classicians who would like to unite *les honneurs de la scène* at *les plaisirs de ville*, but with one who has a clearly defined aim, and although this may be the polestar under my feet, I can get on with such a person capably, but not with those half-and-half people."

In 1834 Chopin gave his second public concert in Paris, at the Italian Opera-house, which was in a pecuniary point of view a great success. He played his E minor Concerto with orchestral accompaniments for the first time. His refined playing was not heard to advantage in so large a theatre. He was disappointed at having failed to excite the enthusiasm he wished for, and for a long time would not venture to perform in a large public hall.

When asked if he studied much before giving a concert, he would answer, "It is a dreadful time for me; I do not like public life, but it is part of my profession. I shut myself up for a fortnight and play Bach—that is my preparation. I do not practice my own compositions." When speaking to intimate friends, he would sometimes say, "I believe that my works will stand on their intrinsic merits, whether these be recognized now or in the future as immaterial." Mozart was Chopin's ideal type, whose sweet melodies had for him a more fascinating charm than the colossal conceptions of Beethoven's

genius. He had a strong aversion for anything commonplace. He did not agree with Mozart's father, who said to his son, after a representation of "Idomeneus," "You have been wrong in putting in it nothing for the long run." To be heard to advantage he required a small and select company of connoisseurs, who could appreciate in his subtle furrows, as Liszt calls his short pieces, all the poetical refinements which was his peculiar characteristic. "I am not adapted for giving concerts," said he to Liszt. "I feel tired in presence of the public; their breath stifles me; their curious gaze paralyzes me; but with you it is a vocation, for if you do not please the public, you know how to agitate and overheat them."

In 1835 Chopin went to Marzabud under the pretence of trying a cure. The young lady whom he worshipped in his youth was married in Warsaw. He was deeply grieved and even enraged at the news, but time, the great healer of wounds, calmed his ardent spirit, so much so that he was soon engaged to another young lady, sister to one of his Polish friends whom he met in Paris. All idea of future travel was given up, he looked forward to a career in Paris which promised to be all he desired. Alas! his hopes were again blighted, for not long after his departure he was informed that his affianced elected to be a courtesa instead of the wife of an artist. Finding his hopes again shattered, and deeply pained by the result, he allowed himself to be ensnared by a most clever and talented woman, who, according to Karłowicz, exercised a most baneful influence over him. This lady was Aurora Dudevant, the celebrated French authoress, who wrote under the name of George Sand.

Here I may observe that on this subject I speak only from hearing, for I was not personally acquainted with George Sand, though I met her frequently in society. His heart was at first untouched, for in a letter to his parents he says: "I have made the acquaintance of an important celebrity, Madame Dudevant, well known as George Sand, but I do not like her face, there is something in it that repels me." She was passionately enamoured of Chopin, and when with him her rather manly features assumed an attractive softness. He felt a happy pride in being loved by a woman of European celebrity, and soon forgot his affianced's faithlessness.

He now began to withdraw himself from his large circle of acquaintances, giving himself up to a few very intimate friends, among whom were Liszt, Hiller, Ary Schaffer, Eugene Delacroix (two famous painters), and the German poet, Heinrich Heine, of whom Ernst said that sarcasm had consumed his heart and scepticism swallowed up his soul. In the autumn of 1837 Chopin was much weakened by a pulmonary attack, and, contrary to advice, accompanied George Sand to the island of Majorca. Here he soon became worse, and although he

born his sufferings manfully, he could not control his restless imagination. George Sand then writes of him: "Chopin's character showed itself in varying circumstances; although sensitive to all marks of friendship and smiles of friend, he would remember the slightest offense for days and weeks together. Real grief never troubled him so much as small vexations. He could not overcome this morbid weakness of character, and his irritation was often out of all proportion to the cause. Like very imaginative and nervous men, he would torment himself consciously with melancholy thoughts. His excessive anxiety about illness, his insupportable repugnance to the slightest sign of poverty, and his luxurious habits, must have made his residence in Majorca very distasteful to him. But he was not in a condition to travel, and when he was somewhat recovered contrary winds arose, and the ship was obliged to remain at anchor for three weeks. Our stay at the anchor was a misery to Chopin, and a hard trial to me." In writing also to a friend, she speaks of Chopin's physical sufferings as being increased by the most dismal imaginations. "Far from picturing the soul of a beloved one in a better world, Chopin had dreadful visions. The spirits harnessed and entangled him in their magic circle, and instead of seeing his departed friends smiling at him from the shades of the glorified, he imagines that their lifeless forms are at his bedside, or that he is tearing himself from their cold embrace."

In 1844 he was much affected by the death of his father, and unable to write to his mother on the sad event, probably owing to his liaison with George Sand, who wrote a touching letter for him. He certainly considered his connection with this talented woman a second home, and would have led her to the altar had it been possible. Her attachment for him soon began to waver, and he was grieved at the complaints she often made in his presence of the futility of wanting him. He implored her to go to the theatre, and give parties, telling her he would be content if he knew that she was happy. At this time George Sand had written a romance, entitled, "Lucrèce Floriani," in which she appears as the heroine and Chopin as Prince Charles. He was truly mortified on reading the book, and particularly so when George Sand's children said to him, "Monsieur Chopin, do you know that Prince Charles is meant for you?" During a violent scene, of which the daughter was the innocent cause, a complete rupture ensued. To the mother's urgent reproaches he merely replied, "I shall leave your house immediately, and I only desire that my existence may be blotted out from your memory." The same day the celebrated artist quitted her for ever.

This account is certainly the one most credited by those, and they are many, with whom I have conversed on the subject. I think it but fair, however, to bring before you the

epitaph of "An Oboeist," as given by the *Musical Times* in the February number of this year. The writer comes forward as the champion of George Sand to demolish Karasewski, as Karasewski to a certain degree came forward to demolish Liszt. My mission is not a demolishing one, and you will have to draw your own conclusion from statements set before you. I cannot help thinking, however, that Chopin was in a very exceptional state of mind, having lost, as he did, two objects of his affection. I agree with the "Oboeist" that he was not attracted by the intensity of George Sand's love, but that he hungered after sympathy, which she abundantly bestowed on him. Her position was a peculiarly painful one, having a son of twenty-four years, whose temper was easily tried by Chopin's extreme sensitiveness, and who, as is said, threatened to leave his mother's house. The rupture which took place, arising from whatever cause, was accepted by the great novelist, and considered by her, according to the "Oboeist," as rightly purchased after eight years of maternal devotion.

After this separation Chopin was laid on a sick bed by grief and agitation, so much so that his recovery was thought hopeless by his friends and Getman, his favourite pupil, who nursed him with unremitting care. Through the indefatigable efforts of doctors and nurses he somewhat recovered, and gave a farewell public concert at Pleyel's, where he had a most enthusiastic reception from a select and distinguished audience. One evening, when walking on the boulevards, he said to a friend, "I wish that some good fortune would put twenty thousand francs into my desk; that would set me up once for all, and I could indulge in the comfort of which I am so fond." That night he dreamt that his wish was realised, and a few days after, on opening a secret drawer, he found the desired sum, the gift of Miss Sterling, a Scotch lady and one of his devoted pupils, who, on hearing of his wish from Spontowicki, gave the £100, which he managed to place there. Having had many invitations to visit England, where his works already enjoyed a well-deserved popularity, he started for London. He was presented to the Queen and played at Court, but his exertions and want of sleep materially injured his weak constitution. He accepted engagements in Scotland, but the climate was too severe for him, and his Scotch friends, although with the best intentions, gave him no rest; they would introduce him to their relatives, positively killing him with kindness. In a letter to one of his friends he says: "I have played at a concert in Glasgow before all the *haute volée*. To-day I feel very much depressed—oh, that fog! Although the window at which I am writing commands the most splendid view in Scotland, I can see nothing except when the sea breaks momentarily through the mist. I shall soon forget Polish, and speak French like an Englishman, and English

like a Scotchman. I feel weaker and weaker, and cannot compose, not from want of inclination, but from physical causes; and, besides, I am in a different place every week. But what am I to do? I must at least try by something for the winter."

On a tour which I made with Albert, I met Chopin at Manchester, where he was announced to play at a grand concert without orchestra. He begged I should not be present. "You, my dear Dubois," said he, "who have heard me so often in Paris, remain with these impressions. My playing will be lost in such a large room, and my compositions will be ineffective. Your presence at the concert will be painful both to you and me."

Notwithstanding this appeal I was present, unknown to him, in a narrow corner of the room, where I helped to cheer and applaud him. I heard him then for the last time, when his perfection was fulfilled in part, for his playing was too delicate to excite enthusiasm, and I felt truly sorry for him. His performance at that concert, however, has not effaced those pleasurable and wild emotions which I hope ever to retain of his playing and of himself. He was now longing to be back in Paris, and gave minute directions for a suitable residence, and even to buy bunches of violets to make the room small sweet. Before leaving London he performed at a concert for the benefit of Polish emigrants, which was numerously attended. In Paris, his disease, which in 1830 manifested decided symptoms of an affection of the lungs, made rapid progress. He seemed in a manner to long for death, and expressed a wish to be buried at Père la Chaise, beside Beethoven. His last hour was now approaching. He asked the Countess Potocka, who was weeping bitterly, to sing something. Maintaining her emotion, she sang Stradella's Hymn to the Virgin, at the termination of which he faintly exclaimed, "Oh! how beautiful. My God, how beautiful! Again, again!" She then sang a psalm by Marcella, weeping friends kneeling at his bedside. Evening closed in, and the next morning, feeling a little better, he asked for extreme unction, and confessed to a pious priest. To those around him he gave his blessing, and, after moistening his lips with water, kissed the hand of Gutman, his devoted friend and pupil, and, with one sigh, closed his eyes for ever. Many a tear was shed when his death became known, for he was beloved by all who knew him well. His funeral obsequies took place in Paris, at the Madeleine Church, where Mozart's Requiem was sung, the solo parts being taken by Mesdemoiselle Viardot-Garcia, Castellan and Signor Lablache; Mayerbeer conducted. Chopin's Preludes in B and E minor were played on the organ by Leffebvre Wely. According to a custom less common than formerly, Chopin was laid in the grave in the clothes he wore at his

concerts, and a goblet of exquisite workmanship, filled to the brim with his native earth, which he fondly cherished, and which was presented to him nineteen years previously at a banquet given at Wola in his honour, was now engaged of its contents on his coffin.

Those of my audience who desire to know more of that greatly gifted musician will be amply repaid by the perusal of his life by Liszt, his sincere and loving friend; also by a new volume, entitled, "Frédéric Chopin: His Life, Letters and Works, by Monte Kärttewski." It is an easy matter to compress within a short space of time all that an audience would like to hear and a lecturer to impart. I have tried to deal with my subject so as to give you as much information as possible, and my anxious wish now is that you may not have found me tedious.

DISCUSSION.

The Chairman proposed a vote of thanks to Mr. Osborne, for the interesting paper he had given, which was carried unanimously.

Mr. Osborne, in acknowledging the compliment, said it was always encouraging to a lecturer to find his efforts appreciated by his audience, and it was especially so to him under present circumstances, as he had been suffering for some time from sciatica, and up to the last moment it was even doubtful whether he should be able to come; indeed, he thought it would be necessary to have himself transported from the street through the drawing-room window by a crane, to avoid the fatigue of walking upstairs. He should be glad to answer any questions any one might wish to put with regard to Chopin.

Mr. Huxon said his knowledge of Chopin was chiefly derived from Grove's "Musical Dictionary," in which it was rather represented as if Kalkbrenner desired to have Chopin for a pupil, and tried to persuade him to place himself under his instructions, and this hardly agreed with the account Mr. Osborne had given. He should also be glad if Mr. Osborne could give any further particulars with regard to Chopin's favourite pupil Czerny, to whom he had referred, or any other of his pupils.

Mr. Otto Goldschmiedt said he had had the good fortune to be present at the concert in Paris to which Mr. Osborne had referred, in 1849, and will retain a perfect recollection of it. It was at the end of January, within a fortnight or three weeks of the revolution of 1848, and Chopin was then already affected by the disease which a year and a half later took him off. He was extremely weak, but still his playing—by reason

of that remarkable quality which he possessed, of gradation in touch.—banned none of the impress of weakness which seems attributed to *finger playing* or softness of touch; and he possessed in a greater degree than any pianoforte-player he had ever heard the faculty of passing upwards from *finger* through all gradations of tone. As Mr. Osborne had remarked, his whole playing was really no *subtle playing* at all; his left hand kept a very distinct rhythm and perfect time, whilst the right hand performed independently, just as a finished vocalist would sing properly accompanied by a sympathetic accompanist. On this occasion he played on an instrument by Pleyel to which he was particularly partial: he had a great fancy for the person of this maker, who was himself a great performer as well as an instrument maker. This concert was particularly remarkable in a social point of view, because it took place almost immediately before the revolution broke out, and at the time of those famous political banquets in Paris which immediately preceded the revolution of February. Of course great excitement followed, and he had very little doubt that one of the reasons of Chopin leaving Paris was the disturbed state into which France had fallen. He was supported at this concert by Alard and Pausanias, with whom he played a trio by Mozart, and by one of Madame Viardot-Garcia's sisters as the vocalist. It was extremely difficult to obtain admission, for Chopin, who had been truly described as a most sensitive man—which seemed to be prominently a quality of artistic organizations—not only had a list submitted to him of those who ought to be admitted, but he acted that list, and made a selection from the selected list; he was, therefore, surrounded by none but friends and admirers. The room was beautifully decorated with flowers of all kinds, and he could truly say that even now, at the distance of thirty years, he had the most vivid recollection of the concert. Chopin played, in addition to the trio of Mozart, many of his own compositions; not the tremendous ones, such as the *A flat polonaise*, but several of his nocturnes and studies; and the audience was so enraptured with his playing that he was called forward again and again, and played some of those lesser works which had made such a sensation all through Europe. With regard to his teaching, he might say that he had known intensely one of his later pupils, the one who, in his humble opinion, had given the only correct and true edition of Chopin's works, a Norwegian of the name of Tellefsen. He studied under him in Paris, and knew Madame George Sand, and their relations; but with regard to that subject, it seemed to him so delicate a one that it was best passed over. He had read carefully Karasowski's "Life of Chopin," and also the admirable defence of Madame George Sand, by "An Quincis," in a recent number of the *Musical*

Times. He doubted whether the view taken by the latter was the one which would present itself as the true one to many who were at the time in Paris, but however that might be, he thought it was well not to dwell upon that point. Chopin was an extremely conscientious master; as far as he could learn, his pupils had to study a great deal the works of Sebastian Bach and also those of Mozart, as well as his own compositions. He had a great notion that he was less fitted to teach general pianoforte music than that of these composers and his own. He himself was sent to Paris to be placed under him, but the revolution intervened and prevented it. M. Tallefer, however, remained his attached pupil to the end, and he believed he was present during the latter weeks of his illness, and he had related to him one very interesting circumstance—namely, that Chopin caused all his unpublished compositions to be burnt before his death. There had been a great deal of controversy with reference to Mendelssohn's posthumous compositions; and Chopin was ill long enough to see that all his unpublished works and letters were burnt. That explained to a great extent why so few posthumous compositions had seen the light.

Mr. SALAMAN said there were probably few present who had had the good fortune to hear Chopin, and as he had enjoyed that great pleasure, he thought it only right to state his impressions. He heard him after the concert in Paris to which Mr. Goldschmidt had referred, namely, at an evening party given by the late Mrs. Barton; he could not state exactly the month, but it was when he was in England. He was at that time in a very delicate state of health, being little more than a shadow of his former self; but he played most charmingly. He should never forget his playing; he had a very delicate and refined touch and the most exquisite expression possible. There was one piece he remembered in particular, the well-known waltz in D flat; he remembered every bar, how he played it, and the appearance of his long, attenuated fingers during the time he was playing. He seemed quite exhausted after his performance, and he was informed that he was in so weak a condition that he had frequently to be carried up and down stairs.

Mr. A. D. COLMAN said he remembered some few years ago to have read some interesting letters from Home in Paris, in which he gave his opinions of Meyerbeer, and the great reasons of that time, and amongst them were what appeared to him some extremely satirical, if not unkind, remarks about Chopin; he should therefore be glad if Mr. Osborne could give any information about the lady's relations with Home, whether they were of an intimate character, or only a general acquaintance.

Mr. OSBORN said there was no doubt in the world that

Kalkbrenner desired Chopin to be his pupil, but what Chopin could have gained by lessons from him he could not see. It may be asked, why did he wish to become his pupil; and to that he could only say that when he came to Paris he found several great artists playing there belonging to the school of what might be termed thunder and lightning pianoforte-playing. His reputation was not yet established as a composer, and he felt he should like to be able to come before the public and get some share of patronage as a pianoforte-player. This, however, he never did. In all his concerts he was admired as a composer, but as a player in large rooms he was nowhere. He quite agreed with Mr. Goldschmidt about his pianoforte-playing and his method with his pupils, because, whilst Chopin was always asking him about Kalkbrenner's method, he on his side was always asking Gutman what Chopin did, and he learned that his great object was to get the left hand perfectly independent, so that it might keep the time regularly, whilst the right was more free to develop the themes under treatment. With regard to the works which he recommended to his pupils, they were those of Sebastian Bach, Mozart, and also the "Grandes et Petites Sonates," by Clementi. He never heard Gutman play, but he knew that he was highly considered as a performer by those who heard him. With regard to Heine, he had also had the pleasure of his acquaintance, but he was always in very delicate health, and therefore had not had so much opportunity of knowing him. He always heard, however, that he was always very glad to be with him. He certainly was not aware of any unusual expressions being used by Heine, and all he could say was that he was very sorry if it were so. In conclusion, and just to show the difficulty of arriving at exact dates in biographical matters, he might state that Chopin's birth had been given as 1809, by Karsowski, whilst his tombstone stated 1802, but at the beginning of this year a monument to his honour had been inaugurated at Warsaw where his heart was deposited, and there it was stated that he was born in 1802, this date corresponding with that on his tombstone in Paris in Champs. He, therefore believed that 1802 was the correct date, because Chopin's sister was in Paris when he died, and one would suppose that she would be able to give the right date.

Mr. Salazar proposed a vote of thanks to the Chairman, which was carried unanimously, and the meeting adjourned.

Mar. 2, 1886.

PROFESSOR W. H. MONK,
IN THE CHAIR.

ON MUSIC AS A PROFESSION IN ENGLAND.

By CHARLES KENNEDY SALAMAN, Esq.,

SECRETARY GENERAL OF THE ASSOCIATION OF MUSICIANS, &c.

Were the observations I am about to address to you intended only for the hearing and perusal of the members of the Musical Association, I might long have hesitated before I ventured to discourse upon music as a profession in this country; much more so I do not presume to think that I can say anything upon that subject which is not as well known to them as to myself. Still, with a professional experience of more than half a century, I am not without hope that I may, perchance, touch upon topics which may prove to be of interest and utility to my younger and less experienced professional brethren and sisters. I shall, of necessity, leave much unsaid which may be considered worthy of notice, and shall hope, therefore, that in any discussion which may follow the reading of this Paper you will generously supplement my inadvertent omissions.

The profession of music may be surveyed from two points of view, which I shall term the purely artistic, and the purely professional. By the former I mean the practice of music with reference alone to the art, its cultivation, and its progress. By the latter I mean the practice of music as a source of income. While giving full consideration to the engagements of his profession, the true musician will never ignore his obligations to art, but will uphold its dignity, and guard with jealous care its inherent purity from every contaminating influence. It is from the latter view that I am about to survey music and musicians.

As in the military profession there is one common appellation—soldier—applied for the general and the private, so, in the musical profession, there exists but one designation—musician—for the most illustrious composer, the most accomplished virtuoso, the concert-hall vocalist, and the most inefficient member of a German street-band. It is nevertheless understood that, in its widest acceptation, the title "musician" is truly applicable to those only who, as composers or executants,

are entitled to it by their complete acquaintance with the theory and practice of music.

To the excited fancy of many ardent lovers of music outside its boundaries, the musical profession would appear to be exalted by a kind of halo of unceasing pleasurable action, calculated to charm the imagination and fire the enthusiasm of ardent passions for musical distinction. Whether this be a seeming or a reality will appear hereafter. It is, perhaps, more than any other profession remarkable for the multiplicity and diversity of its several departments, which, with its numberless tributary branches, are evolved from its two large divisions—composition and performance.

The choice of music as a profession is ordinarily the consequence of a combination of considerations. An inclination—a disposition rather—towards the art evinced in youth, if not in infancy, most commonly determines the career of the embryo musician. A catalogue of select musical prodigies would include almost every famous name in musical history.

Remarkable aptitude for music, and the rare gift of genius, are mostly manifested in the middle ranks of society, and often among the so-called labouring classes, who, in all ages and in all countries, have profusely endowed the world with rich examples of resplendent genius in every department of art, science, and literature. A musical genius is seldom found in aristocratic circles. The numerous arduous applications and severe disciplines which are imperatively demanded from the earnest student of music are qualities which are not ordinarily exercised by the noble and the wealthy, to whom the stimulating incentives to industry, viz., ambition and limited means, are wanting.

The study of music, as we all admit, is wholly engrossing. Excepting the most careful training, it can hardly be attained upon at too early an age. Those who commence to study music when the ardour of the heart has commenced to cool, and the elasticity of youth has slackened, labour under disadvantages almost insurmountable. Reverse of fortune has repelled many talented amateurs, who had previously looked in the sunshine of favour and fortune, to turn to music as a means of subsistence. The insufficient emoluments of public offices have tempted others to take refuge in music, and to enter its wide arena in a professional capacity. Rarely has this somewhat hazardous experiment yielded hopeful anticipations. Encouraged possibly by the alluring plaudits and flattering encomiums of admiring relatives and friends, many quondam dilettanti have entered the lists with fixed views as composers, singers, and instrumentalists. In many instances they have too late discovered the remarkable difference between the display of moderate musical dexterity before a gathering of eulogistic auditors, and its public exhibition, in

a professional character, before assemblies of impartial, unsympathising, and possibly, uncharitable critics.

The social status of the highly cultured professor of music has risen considerably. This honourable elevation has been graciously recognised by Her Majesty, whose bestowed of social rank upon many deservedly esteemed native and foreign resident musicians, has marked upon the annals of the entire musical profession a new and conspicuous era. Thus their cases are an additional incentive to the young musician, who would aspire to exalted professional rank, so to qualify himself as an accomplished artist, a man of superior intellectual attainments, and a highly bred gentleman, that he may be prepared to accept and maintain a distinguished position in any society to which, by his professional and personal repute, he may be summoned.

That it is not incompatible with unremitting musical study to find time to arrive at a state of proficiency in kindred pursuits, is evidenced by the number of musicians who now grace the musical profession by their varied accomplishments, which extend far beyond the actual confines of their strictly professional requirements.

No modern circumstance has so notably tended to enhance the reputation of the musical art as an intellectual vocation, and to raise its profession to the level of the so-called liberal professions, as the establishment of the Association of musicians and scientists, and the annual publication of its proceedings. Another important event in the modern history of the musical profession has been the incorporation of Trinity College, London, at which all branches of education, including music, would appear to be regulated by the highest scholastic standard. The increasing number of musical professors who, in addition to musical degrees, are taking other collegiate honours is another item of significance to be remarked in the actual superior educational status of the modern professor.

Celebrated musicians have acquired their technical knowledge and professional experience at various periods of the art's progress in many different ways. In former times, composers, who had already earned some degree of fame in their own country, were wont to resort to the then most renowned musical institutions of Italy, in order to extend the range of their observation by listening to the finest performances of Church and dramatic music; passing courses of counterpoint under the guidance of the then greatest contrapuntists of Europe; and refining their own style of composition by the study of Italian melody in the land of its inspiration. Numerous great masters have achieved their greatness through their own inherent energy. With a limited amount of positive teaching they have, by their own unaided efforts, solved complicated music-problems; have earnestly exercised

and analysed the credits and enduring compositions of the roman-classics, and have, by such means, educated their ears, poetically described as the "veils of the soul," to receive through them every harmonious impression.

Exciting, pleasurable anticipations, more than sufficient to fascinate his imagination, are presented to the young musical student by the prospect of a continental musical training. A musical reputation legitimately acquired at a foreign conservatoire is doubtless of high professional value to a British musician. Not because he can procure there a route through knowledge of his profession, but because the fables of our countrymen and women to prefer things foreign to things native, more particularly in regard to music, yet obtain, although possibly in a somewhat milder form than when, in 1711, Addison wrote: "We are transported with anything that is not English, so it be of foreign growth, let it be Italian, French, or High-Dutch, it is the same thing."

It is an acknowledged fact that a complete musical education is obtainable without departing from the shores of Great Britain and Ireland. It is undeniable that there are no better musicians, and no more efficient instructors in every branch of the art and science of music, than Great Britain and Ireland can produce. A first-class musical education is certainly more costly in this country than on the Continent, especially if acquired by private tuition from the best professors; but when the additional charges for travelling and living abroad are taken into account, the expense may, in the end, be about equal.

The more venerable Royal Academy of Music, the parent musical academy of Great Britain, which, under the conduct of its accomplished principal, and an efficient professional staff, was never in a more flourishing condition, affords to students of talent and industry, at a comparatively moderate cost, valuable actual and contingent advantages. I can conceive no more desirable introduction to the musical profession than through the portals of the antiquated mansion in Tottenham Street. I presume that professional advancement and employment are secured to every distinguished pupil of the Royal Academy of Music. Advertisements daily invite attention to the respective special classes to public support of many more recently established musical academies, which are supposed to possess features of considerable attraction to many. Scholarships secure gratuitous instruction, besides a certain prestige, which is always associated with successful competition.

Young musicians whose tastes lead them in the direction of cathedral appointments should, I apprehend, amuse themselves as early as possible to cathedral choirs, and thus gain a sound musical education, together with the mental training which may best fit them for the sacred musical offices of the Church. Many of our late most eminent Church composers, organists

and choristers, are reported to have qualified themselves for that serious department of the musical profession at what may be correctly termed the musical-terminaries attached to St. Paul's Cathedral, Westminster Abbey, and the Chapel Royal.

For a musician of reflection, and of intellectual resources, my best-ideal of a musical professor's existence has always been that of an English cathedral organist. An accomplished musician of far-reaching attainments, relieved from pecuniary anxiety by an assured stipend; a professor respected and admired, in and out of his profession; visiting on equal terms his most worthy neighbours; away from the distracting turmoil of the work-a-day world; daily engaged in the performance of his sublime vocation; dwelling in a mansion of quiet, and surrounded by sacred associations, and soothing influences, under the shadow of a temple consecrated to his religious faith—a temple whose sacred monuments and venerated relics, breathing, as it were, religion, serve to recall the past and suggest the future—the cathedral organist, according to my view, enjoys in calm dignity the most enviable position to which any art-professor can possibly aspire.

I will now imagine a compact array of young organists, pianists, harpists, cellists, violinists, viola-ists, contrabassists, and wind-instrumentalists, armed cap à pied, with their several musical instruments; male and female singers with well-tuned voices; and composers with an ample supply of musical paper, fully equipped, well-drilled, "their souls in arms and eager for the fray," impatiently awaiting admittance to the magic circle of the harmonious profession of music. Before its enchanted portals yield to the "Open sesame!" of the advanced guard, I will, as a professional elder, presume to offer to them, in all friendliness, a few words of counsel.

While hopefully entering upon his new, and, let us hope, promising career, it were wise in the young musician to moderate the difficulties which he will have to encounter, the obstacles he will have to surmount, before he shall have reached the goal of his just ambition; viz., an undisturbed, undisputed position in his profession. Should he be gifted with genius, with its concomitant sensitiveness of character, fine mental organization, and impassioned temperament—the common attributes of the genuine artist—he must gird up his loins, and arm his retinue with finely tempered fortitude and resignation, so long "the spurs that patient merit of the unworthy take." His most school has woe and temper to submit, with a smile and a shrug, to petty slights, vexations, derisive indifference, ingratitude, sometimes rudeness, frothing neglect, disparaging—often unjust—criticisms from incompetent judges. He will perceive that only those who are

satisfied to remain in obscurity can hope to escape calumny, and the harmful effects of professional jealousy, envy, and all uncharitableness. When Petrarch, in 1327, received at Rome the poet's laurel-crown, he is said to have exclaimed: "This honour, which I have so long coveted, has served to set against me envy and jealousy. Every tongue and every pen has been sharpened to injure me, and those who were my friends have become my foes. My ambition has been satisfied at the cost of my peace of mind."⁴

In our profession, as in others, we have high-minded, warm-hearted members, who manifest kind and effective interest in the professional advancement of young artists of talent; who inspire them at the right moment with generous words of comfort and encouragement; who offer them the friendly grasp of sympathy, which awakes slumbering energies, revives waning hope, and stimulates further active exertion to attain success. On the other hand, there are those upon whose unresponsive features genial smiles of commendation are more rarely seen than repelling frowns of heartless disparagement; from whom scant sympathy is shown for the young musician who is taking up the difficult, steep, and slippery ascent which leads to fame. Few professors of eminence, I apprehend, have escaped, at some period of their career, such varied experiences.

It is now time to consider some of the principal departments of the profession which present the means of earning an honourable subsistence. These will comprise music-composition, public and private vocal performance, solo and orchestral instrumental performance, and the wide field of teaching.

The British musician whose inclination and ability would lead him to the composition of high-class music, and who would thus vindicate his claim to take rank among the music-classics of Europe, must be prepared to produce his most ambitious works at his own pecuniary risk. Unless he be favoured by remarkable circumstances, which fall to the lot of very few musicians, he will find no other means of making his compositions known to the public by performance and publication. In his efforts to induce musical societies and individual concert-givers to perform his best works, he will be met on every side with blind details, brusque refusals, obstructions and obstacles, more than enough to damp the ardour of the most hopeful and enthusiastic musician.

By means of a magistrate's search-warrant irreparable meritorious compositions, which may have lain dormant in the gloomy cabinets of unappreciated genius, might be brought to light, oratorios, operas, symphonies, overtures, concertos, cantatas, toccatas, and sonatas—yet unheard and unheard of—whose musical sweetness, long wasted on the desert air, had it been walked into the unprejudiced ears of an appreciative

public, might possibly have tended to excite that germ-seed of the British musician, viz.: the innate prejudice of English men and women against the native music of their own country.

The composition of drawing-room pianoforte music, of moderate difficulty and pretensions, was once a prolific source of profit to the popular pianist and teacher. There was a time within the memory of many here present when men with endless variations, fantasias, capriccios, divertimentos, arrangements and arrangements of opera cavatinas, furnished employment to the writers, the publishers, the teachers, and the pupils of those days. That form of professional entertainment has become a kind of extinct volcano. Now the supply of new, melodious, and well-composed music for the pianoforte is not equal to the demand. The discriminating section of the musical public have become cautious in purchasing pianoforte music which does not bear the signature of a well-recognized name, or which has not attained notoriety by its public performance or by wholesale advertising. Publishers now look upon music-publication as a kind of lottery, in which prizes are less common than blanks, and they have consequently almost ceased to speculate in the purchase of modern pianoforte music, preferring rather to import and publish the non-copyright works of the advanced German school of composers; which, although sometimes expounding to the educated musical ear, are accepted with complaisance, and even with admiration, upon the strength of their supposed originality and their foreign origin.

In no other country is a certain class of solo vocal music as profitable, alike to the composer and publisher, as in England. Its success, in the majority of instances, may be attributed to the continuance of the hateful "royalty" system, whose inherent unhealthiness well, it is to be hoped, being it are long to an untimely end. Unlimited advertising is another prominent feature of illegitimate success.

The courageous British composer, whose dramatic prodigies may tempt him, in these Wagnerian days, to stoop the chafed of English grand opera, would do well to remember the potentias inscription over the gate of Dante's "Inferno":—

Entrate qui inferno, voi che entrate!

Following in the wake of the many popular French musical extravaganzas, which of late years have attracted public attention in all parts of the world, the tide of popular favour in this country has been for some time past flowing with a rapid current towards the whipsail of "Soccorro," "Pinafore," and "Pompadour Pirates." When all the changes of that class of dramatic music shall have been rung; when satiety shall set in, and the public machinery of the British public shall require

repose from an exuberance of enthusiasm, a more healthy operatic taste may again prevail; and we may once more hope to see the British dramatic composer expending his talents in the production of high-class operatic music, which shall be sung by British vocalists, directed by British conductors, and applauded by British audiences.

To the young and yet unknown singers of both sexes, who naturally seek public recognition of their talents at high-class concerts, at oratorios, and upon the operatic stage, the difficulty of obtaining opportunities to be heard is every year becoming greater. With perhaps a few exceptions, the principal and best paying societies are in the hands and under the direct influence of music publishers, who seek to make them the medium of giving to their own publications a wider circulation, and who, as a rule, remaining constant to a small staff of singers and instrumentalists of established fame, have no engagements to offer to "outsiders." Even with powerful personal influence it is hardly possible to obtain entrance within the charmed circle of either old or new musical societies as paid vocalists or performers. This state of things is very discouraging, and discouraging to those who seek to gain a livelihood by the exercise of their musical talents, and who have with that view alone entered upon a professional career.

The path to celebrity, and consequent professional employment, was easy and rapid to those upon whom the press and the public have stamped their hallmark of approval. Others, whose talents have yet to be recognized by the same powers, must be hopeful, patient, courageous, and ever industrious, neglecting no opportunity to deserve success, and, supported by a modest self-consciousness of strength, be ever prepared to fill unexpected vacancies, which are often the stepping-stones to high professional advancement. Many talented singers and performers, who are seldom or never heard in the metropolis, nevertheless obtain provincial engagements at concerts and oratorios. Their fees, although moderate in amount, are generally sufficient to enable them to wait for more lucrative engagements in the metropolis and elsewhere.

Foreign musicians, who come to settle in this country, probably unaware of the favorable opportunities for artistship which in some of the populous manufacturing cities of the north of England, have formed an idea of any other residence than London. More than twenty years ago, a very talented musical professor of Rome brought to me from that city some earnest letters of recommendation. He came with the intention of becoming a resident London Italian singing-master, as he was led to expect that gardens were as plentiful in London as blackberries; that, in fact, they might almost be picked up in her streets. He did not remain long under that delusion. He succeeded in gathering a few pupils at a half-guinea per

lessons. This did not satisfy him, and he became impatient. Notwithstanding he gave a successful concert at a private mansion, pupils did not flock to him as he had expected, and he consulted me as to what he should do to obtain pupils. I counselled him to seek a connection in a wealthy city in the north of England, and he availed himself not only of my advice, but of some introductory letters. On arriving at his destination, he wrote upon his cards, "Italian singing lessons by Signor ———, from Rome; one guinea each at the musician's residence; at the pupil's home, *trouvé half more high*." He had not to wait long for pupils. He was then an excellent teacher with a good tenor voice, and soon obtained a profitable connection. As a bachelor he lived economically, saved money, and in a few years retired with a moderate but sufficient income. I counselled others to do likewise.

Music-teaching in this country is acknowledged to be the chief and most lucrative branch of the profession of music. It is that in which the great majority of musicians are mostly engaged. To those who are blessed with a highly sensitive temperament, lesson-giving, to ordinary pupils, is not an agreeable occupation. Wearing to the nerves, trying to the temper, it strains patience to the utmost limit of human endurance. Were a new tariff for musical instruction to be arranged, I would be inclined to price music-lessons to those most deficient in musical comprehension, borrowing the quaint phraseology of my old Roman friend, "*tertia half more high*." In other words, the most stupid pupils should pay the highest rates. The late Sir George Smart was wont to exclaim, with his peculiar nasal twang, "Give me your stupid pupils!" He preferred them for the obvious reason that they remained longer under his tuition. The ability to approximate, and to benefit by second manual instruction, is hardly less a gift than the special talent essential for imparting it agreeably and efficiently. All those who have given instruction in music will agree with me that it is an indefinable pleasure to meet with a pupil of quick apprehension, with warm musical sympathies in unison with one's own; and that if to-day were not a necessity—a train which a famous French statesman would appear to have denied—one might choose to receive fees from such pupils in the coin of gratitude rather than in the current coin of the realm.

The establishment of ladies' colleges has much revolutionised the teaching department of our profession, inasmuch as the branch of lesson-giving called "*finishing lessons*" has, to some extent, become a dried-up professional stream, as compared with the profitable produce of private teaching in the halcyon days of the musical profession, when in this country there flourished Clementi, Donaski, John Cramer, Charles Nette, Moschles, Ferdinand Rca, Kalkbrenner, Melles

Dulcets, Mss. Anderson, and many other eminent pianists of bygone days. The British public now require cheap lessons to be administered upon homœopathic principles—in minute doses at long intervals. By a patent process of instant introduction, pupils of every age and degree of ability are now supposed to be "fractured" by the minute, microtictious, mesopic, manual instrument of twenty-five minutes teaching once per week during a musical-academy term of ten weeks. Yet more extraordinary results are promised to the credulous and confiding in many advertisements that daily meet our wondering gaze.

School-teaching, which once formed an important item in the professor's income, being comparatively certain and to be depended upon, has, at length, from many causes, become doubtful and insecure. Indeed in every branch of the medical profession noteworthy changes have been for many years perceptible, and to the close observer indications of further changes are clearly discernible, which, I am inclined to think, are not favorable at the present time, or promising to the future of music and its profession. These unlooked-for, unpromising changes may be traced to increased and increasing competition, the admission to the profession of too many superficially educated men, indifference to sound instruction, a glut in the market of commonplace, inferior medical publications, cheap lessons, revolutions in national habits and taste, rapid locomotion, and the ordinary vicissitudes to which all things in nature and art are liable.

In "the good old days" of the medical profession, almost every musician of eminence gave his annual "Benefit Concert," and by that means added more or less to his income. His tickets of admission were priced at a half-guinea. Reserved "seats stalls" had not then been invented. Those who added a hand to their vocal attractions usually lost money. The public, as a rule, care little for orchestral concerts. They are nearly always failures, in a pecuniary sense, unless supplemented by powerful popular vocal talent. Concert-giving, therefore, is now a lost item in the modern professor's income. It is in the present day a question of more or less loss, not, as formerly, of more or less gain.

Unless aided by lucrative offices, or by private resources, musicians have not often had it in their power to lay up pecuniary stores for their support when overtaken by illness, old age, infirmities, and the numerous ills "which flesh is heir to," much less for the provision of their families after their decease. England is unhappily wanting in such appointments as were held in Germany by Bach, Hummel, and other famed composers, which assure a moderate stipend for life to the musician who may have been compelled, from the heat of his genius or from uncontrollable circumstances, to work in an unproductive field

of his art, and enable him to indulge his human hopes as the close of life in a sufficient degree of professional ease and dignity. The musical professor of distinction who, in this country, would insure respect and remunerative professional fees, must pay strict attention to his external appearance, as regards his domestic economy, and his general household and personal condition. In order to satisfy the prying curiosity of the outer world in such matters, he may often be compelled to tax to the utmost his limited pecuniary resources. England too often estimates a professional man's status by the amount of his fees, and by his domesticities. His taxes, unfortunately, do not increase in the same ratio as his house-rent, taxes, food, apparel, and the education of his children. The unworldly world not unfrequently indulges in the luxury of music at the expense of the professor, to whose necessities it is coldly insensible; whose engagements, being dependent upon the state of his health, upon the ebullience of fashion, the caprice of the public, and upon unexpected circumstances beyond his control and calculation, are ever uncertain. The amount of consideration which a musical professor occasionally experiences from his noble and wealthy professional competitors, would scarcely be credited by the inexperienced. There are some few musicians, notably popular singers, who are in the receipt of large incomes derived from engagements, and hence "royalties" paid upon songs which they themselves may have rendered popular. There are others who earn moderate incomes, but the majority of musical professors, of both sexes, find it sometimes a hard struggle to support themselves and their families, with ease of mind and comfort of body.

Philanthropy has always been a characteristic feature of the profession of music. No other, with perhaps the exception of the medical and actor's profession, has done so much to alleviate distress and bestow substantial comfort upon the unfortunate. Individually and collectively, musicians, in every department of the profession, have been always ready, upon every summons, to exercise their talents gratuitously in furtherance of charitable objects. Music and charity have so often been thus intimately united that they may be almost deemed an synonymous expressions. Bearing this fact in view, I would avail myself of this favourable opportunity to remind all who love music and respect musicians; all who have derived, and get derive, enjoyment from their efforts; all who sympathize with musicians when their powers fail them; that there exists in this great city a blessed institution, dedicated to Music and Philanthropy, which annually distributes thousands in relieving the declining years of the aged and incapacitated musical professor; in providing assistance for his widow; in educating his orphan children, and setting them out in life. This noble institution, entitled the "Royal Society of

Musicians," associated with the illustrious name of Handel, is justly the glory and pride of the British musical profession.

My personal experience of our profession having been gathered more in the metropolis than elsewhere, I have thought it discreet to limit my observations principally to its practice in this city. Much has to be related of the life, duties, and enjoyments of the country professor, which, it is to be hoped, will be pruned and gladly welcomed by young professors, who may be hesitating as to the locality in which they may find it most desirable to establish themselves. An interesting topic for comment and interchange of opinions would doubtless result from considering the relative position of the London and provincial professor.

Now as to the general aspect of the musical profession at the present time in this country.

In proportion to the population of the past and present, more persons now learn music than formerly. The number of musical institutions of all kinds, academies, colleges—private and public—has considerably increased during the past few years. An immense amount of music is continuously issuing from the presses of publishers—new editions of standard works at marvellously cheap rates, and other musical publications at expensive prices. We have in our midst highly talented professional and non-professional musicians. Choristers are now to be counted by thousands who formerly were numbered by hundreds. Music and musical instruments have become a large and important item of commerce; indeed, music, in various ways, may be almost claimed as a staple necessity. Music and musicians are to be seen and heard everywhere. In Great Britain and Ireland, music, as a profession and a trade, furnishes the means of living to about eleven thousand persons, four thousand of whom reside in and about the metropolis. Exclusive of pianoforte players and organists, I find, in "Rosen's Musical Directory, for 1886," the names and addresses of one hundred singers, and about twelve hundred and forty-four instrumentalists. This sum, of course, be but an approximate computation.

According to the authority I have named, there are resident in Great Britain and Ireland 350 violinists, 50 viola players, 122 violoncellists, 57 contra-bassists, 28 flautists, 27 oboists, 14 bassoons, 43 clarinetists, 18 wood-bonists, 20 trumpeters, 24 horn-players, 17 euphonium players, 91 cornet players, 31 concertina-players, 60 harpists, 27 guitarists, 4 players on the bombardon, 5 on the bagpipes, 3 on the baggs, 1 on the contrabasso, 1 on the sarrabon, 1 on the boon, and 1 on the fee whistle. Organists and pianists are beyond my calculation. I have made no attempt to number them.

Having made my first bow before a British audience, and

published my first composition in 1868; having, during a long professional career known more or less intimately most of the musical celebrities; having heard all the best singers, all the best performers, and all the best music during the past half-century, I venture to form an opinion of the present condition of the musical profession, with reference to the art's progress and the financial status of its professors. Comparing the present with the past, my view, I regret to state, is not a favourable one. I shall be glad to learn that my unsatisfactory estimate of our profession at the present day is incorrect, and that, from positive evidence, the musical profession and the professor may be considered to be in a flourishing condition, and moreover that a satisfactory future may be anticipated.

DISCUSSION.

The Chairman, having proposed a cordial vote of thanks to Mr. Salaman for his interesting paper, which was unanimously carried, invited discussion on the subject.

Mr. W. H. Crossman said Mr. Salaman had touched on a great many subjects, on most of which he had formed some opinion, but it would occupy even more time to go through them all than the reading of the paper itself. In one part he spoke of the difficulty which professors, both male and female, found in acquiring anything like a competency, or getting by money for the future; and he, as treasurer of the Royal Society of Musicians, begged to thank him for the warm way in which he had spoken of that institution, and also to express a hope that the words he had uttered would produce some fruit, and that those who had not heard of that Society before would make themselves conversant with its operations, and give it their support. It only gave money away to those who absolutely needed it, but each year it spent nearly £4,000 in alleviating some of the distress which was brought before it, but it was not by any means a tithe of that which existed. It was evident, therefore, that the Society needed all the support it could receive. If all the ladies and gentlemen who attended concerts at St. James's Hall or Esster Hall would only ten themselves to the extent of one shilling for each concert they went to, that Society would be able to extend its benefits much more largely than it could at present. Mr. Salaman had painted a very pleasing and beautiful picture of the condition of a cathedral organist. He could not see any representative of that body present, but having been connected with a cathedral from a very early age, he knew something of their position, and he heard a large portion of the description might be considered as of rather a poetical character. Looked at in the abstract, he himself should suppose that a cathedral organist's

position must be one of the most enviable in the whole of Christendom. He generally lived in a charming city, under the shadow of a beautiful old building full of historical associations, and he ought to be the most happy of mortals, but unfortunately there came in this practical question, that he had to live, and he must say that he feared cathedral organists were not very well paid; therefore, when he found his dinner-table was very sparingly supplied, and his teacher's bill more than he could readily meet, a good deal of the poetry was driven out of the picture. What he felt about the future of the musical profession was this—that no one who had real ability, industry, and enthusiasm, need fear. He believed that those who had plenty of ability would find that when the position of things shut up one door it would open another. He himself had had considerable experience, and had changed the mode of earning his living in various ways, and yet he did not feel that he suffered. Without going too much into personal matters, he might say that, from his own experience, he felt that if students only first of all ascertained that they had real ability, and would industriously use it to make themselves thoroughly efficient for their future work in life, not as mere singers or players, for that was only half a musician after all, but if they would endeavour to qualify themselves to become thorough musicians, they had as far a right to expect a good career as most other professions. Of course, music suffered in comparison with many other arts from the fact that amateurs might interfere with it. Amateurs could get St. James's Hall, sing so many songs, &c., and probably by that means keep out professional singers, but there was another side to that question. If the amateur, by stepping into the concert-room, took away bread from the professional singer, on the other hand competent musicians would be required to teach these amateurs to sing, and, therefore, if they lost on one side they gained on the other. He thought that no talented musician, who was looking to make as a profession, need despair. If they qualified themselves thoroughly for their profession they would find work to do.

Mr. G. A. Cameron and Mr. Salaman had referred to the somewhat remote age to which he himself belonged; and he remembered, as a professor, in that period he came over to London occasionally from Paris, where he then resided, to give his concerts during the season. For two or three years they were given in the Hanover Square Rooms; price of admission, one guinea. The room was then crowded, but not with guineas. After a few years he had to give concerts with the price of admission a half-guinea, and a family ticket to admit three, one guinea; but his experience was that all the families consisted of one person, and consequently, therefore, he did not benefit by the change. He pined himself on being some-

what of a physiognomist, and he thought he could always tell who were those who paid and who did not. There was a kind of a financial apologetic expression about the countenance of a person who paid. He looked as much as to say that he ought to be there by invitation, and was very sorry that he had paid. He went as far from his recollection that concerns at that time were not in that flourishing condition, in a pecuniary point of view, that Mr. Salaman had described, but were pretty much the same as they were at the present day. Sometimes you met a composer who had got a very fair share of British money, and perhaps he might say that he wanted, but it sometimes happened that this occurred by mere accident, to illustrate which he might mention a circumstance which happened to himself. Many present might know the piece called "Le Fils de Perles." He wrote that piece in Paris, and sent it over to Cramer's. The manager wrote back to say that it would be better to send some philosophical piece on an Italian opera; but he would enter (his at Stationers' Hall as Mr. Unborn's property. He did not send a piece at that time, and took no more notice about it. A year afterwards he came to London, taught "Le Fils de Perles" to several pupils, and, after about a year, when asking for his account at Cramer's, he found there was a charge for entering a piece at Stationers' Hall. He said that was not correct, as he had not the copyright of any of his pieces; however, they insisted that it was, and although the piece could have been had originally for £50, Mr. Beale then offered him £500 for it. He said he must first be certain that it was his property, and having sent to Stationers' Hall, and consulted Sergeant Dylas, who was an authority on these questions, and found that it was so, he returned, but, instead of selling it to Messrs. Cramer, he went round to all the publishers, and sold it to twelve out of thirteen, who had brought it out, for £50 each. By this means he sold it for £1200, instead of £500, but he made every publisher his friend, and by that means chance he eventually got between £3,000 and £5,000 into his pocket. Like Mr. Cummings, he was rather charmed with the description of cathedral organs. It was a most honourable position to be organist of a cathedral. He heard the very best works there; his body was well cared for, having plenty of exercise, both on the pedals and in pulling out the stops; and not only so, but his spiritual wants were also ministered to; for, besides the great festivals, there were fifty-two weeks in each year, and consequently he had the advantage of having one hundred and forty sermons.

THE REV. THOMAS HALLGREN, M.A., remarked, with reference to the question whether amateurs interfered with the profits of the profession, that very early in life it was his pleasure to take lessons in a provincial town, from two members

of a well-known family named Marshall, on the violoncello and piano-forte. When he left Stratford-on-Avon he left Mr. Frederick Marshall as conductor of a musical society, which he had raised there, with a salary of £50 a year, which was raised in consequence of the labours of himself and others as amateurs; and he could only say that Mr. Marshall's opinion was that it was the amateurs who provided for the musicians. He might say that throughout life, as far as he was concerned as an amateur, he had conscientiously endeavoured as far as possible to aid in the support of the profession, not take away from it anything which was its due, or to allow the work of amateurs to impinge in any way on the ordinary gains of the professional man. All amateurs ought to act in that spirit, and he believed many did, and there was no doubt that the wishes and wants of the amateurs in the way of teaching provided a great deal of employment for professional men, which otherwise they would not have.

Mr. CHARLES STOOD said that Mr. Salaman had called forth quite a burst of comment, by an allusion in one part of his paper to the infelicity of teaching, and it seemed to be a generally understood thing that, when musicians considered to give lessons, they were putting themselves into a very unpleasant position. He thought they ought not to take that view, nor ought they to expect always to have very clever pupils. Lesson-giving ought to be a real pleasure to a musician, and might be so if he only learnt properly how to teach. The great want in teachers was not musicianship so much as the power of imparting thorough instruction in music. He was quite certain that even so-called stupid pupils were generally amenable to sound instruction. Teachers should especially give attention to and inculcate the principles of touch and voice production. The greater number of lessons given in this country were in the arts of piano-forte-playing and singing, and he was quite certain that a so-called good touch on the piano was not half so much a gift as the result of proper training. He himself had a few lessons some time ago from Sir Stredale Bennett, who, when he went to him first, told him, after some complimentary remarks on his reading, that he had no touch at all, but, seeing he was somewhat taken aback, he added, "Never mind, Mr. Stood; I can give you a good touch." It was not for him to say what the result was, but he was quite certain that any parent who studied the principles of education, the conformation of the hand, and the idiosyncrasies of his pupils, would be able to make them thoroughly efficient players. The same thing with regard to voice production. If they only knew in what the true principles of voice production consisted, they would be able to make very fair singers indeed, even from those who apparently had no voice at all. He had come across many

amateurs taught by distinguished musicians who could not play at all, and he could only attribute it to the fact that those musicians were not strictly speaking teachers. He thought it very important that the younger members of the profession should be told distinctly that if they meant to get a living by teaching they must study the art of teaching, and must enter into it *ave amore*, not as if they were simply doing it for their living; but they should become enthusiastic teachers just as they might be enthusiastic composers and players. He did not quite understand what Mr. Solomon said with regard to modern German works being non-copyright.

Mr. SOLOMON said that he referred to works whose copyrights had expired, and which, consequently, any publisher in this country had the right to produce. There were many compositions published on the Continent, the copyrights of which have never been secured in Great Britain. Mr. Solomon had hoped that these were points in his paper which would have elicited a greater amount of discussion and information, especially with respect to the condition of the provincial profession. The musical profession was a prolific subject, and if all were written which might be said upon it, a volume might be produced. He hoped that there were some topics in his paper which, on a future occasion, might lead to another discourse from another member, whose experience in some special departments was greater than his own. Perhaps his fancy had too highly coloured the picture he had painted of the cathedral organist. When young he was much with Mr. Angel at Wells, the then assistant and officiating organist, and Dr. S. Wesley at Exeter, and he had formed his estimate of the cathedral organist's position at that time, some thirty-five years ago. It then appeared to him a most enviable one. No doubt many disadvantages were hidden from his view, such as controversies and inhonourable considerations, which might have become known to him had his experience been more continuous and later.

The CHAIRMAN said there was a paper, which he had been told had originally appeared in a Parliamentary blue-book, on "The Condition of Music in our Cathedrals," by Dr. Wesley, who had just been referred to. It was reprinted and published by Messrs. Rowington, and, though he had not seen it for some time, he had a perfect recollection of its power and truth, and should recommend its perusal to any one who might be interested in that particular point of Mr. Solomon's paper. Of course, there were advantages and disadvantages to be found in every possible position in a profession like that of music, and it might be quite true in theory that the position of a cathedral organist was as acceptable a one as a musician could be asked to hold; but when they came to know the miserable payments made to cathedral organists

throughout the country, it would be to every one, as it had often been to him, matter of astonishment that so many estimable men and first-rate musicians were willing to occupy these posts. When they saw how small a number of the cathedral revenues throughout the country went into the pockets of the principal musician of the diocese, he certainly thought they ought to revive Dr. Winstley's protest, and, if possible, influence such a body as the Ecclesiastical Commissioners to do something like justice to these ill-paid functionaries.

A vote of thanks to the Chairman concluded the proceedings.

JUN 7, 1886.

W. H. CUNNINGHAM, Esq.,
IN THE CHAIR.

THE LYRICAL DRAMA.

By G. A. MACFARREN, Esq., M.A.,

OF THE CHAIR, 1857 AND 1870.

When the subject of this address was decided upon, I had an idea that I might bring before the attention of this meeting many unfamiliar facts in connection with a most important, possibly the most important, branch of medical composition; but as the interest there has appeared the beginning of an article in Mr. Gray's Dictionary—which, although it is not yet signed, I judge from internal evidence to be the production of Mr. Rochester—which anticipates many of the novelties I might have advanced, and sets those forth in the most clear, in the most interesting, and (I can say nothing short of the highest terms of eulogy) the most satisfactory and instructive light. I can with the fullest confidence refer persons who are attracted to the subject to that article, which, in supplying many dates which are difficult to recollect in a mind now cruciated, and many unfamiliar names, will be of very great service as an authority, and will, I am certain, repay anybody's attention and careful reading. If the article continues as it has begun it will give to the world a concise, but a most valuable, history of the course of the lyrical drama.

As to the lyrical drama itself, we must first regard the familiar objection that, as usual, do not mix their sentiments, the dramatic representation in itself is wholly artificial and apart from nature. Being artificial constitutes it a work of art, apart from nature, in so far as it is not a *fac-simile*, but true to nature in so far as it is the heightening of the realities of ordinary life, and heightening them with the bright colour of poetry. It is the province of art to heighten and to beautify, to embellish and to beautify the facts of nature. It is Bacon who has stated that there is no such means of enforcing a lesson as by presenting it in living action, and thus the drama in itself is a most powerful means of instruction. I think it is a happy omen for the coming time that the best authorities

seem now to entertain this view of the drama. The institutions of the Society for Dramatic Reform, the many speeches of distinguished men of letters, and distinguished theologians at the meetings of the Social Science Congress, on the great importance to the world at large of dramatic production and dramatic performance, show that the greatest minds of the time are taking the possibilities of the drama into earnest consideration.

If a work of art were to be limited to the realities of the world, a looking-glass might stand in place of a picture, a gossip report in place of a tragedy, and music would drop out of being entirely. But it is in a picture, as distinct from the reflection in a mirror, that one sees nature through the mind of an artist. It is in poetry that we can enter into the feelings of man through the representation of an artist's imagination; and music expresses those feelings more forcibly than words can utter them, more delicately, more intensely, and if the hearer have the perception which can use to the fullest power of the work addressed to him, he may feel in musical expression the grandest presentation of the feelings of man. The drama "holds the mirror up to nature." Music is that mirror, with such spectral phenomena as show nature in a beautified aspect.

The lyric drama is the most ancient of all dramatic representation. It is attested that Æschylus composed the music for his own tragedies. That these tragedies were musical throughout there can be no doubt, the dialogue being, as we should now describe it, chanted or intoned upon some prescribed arrangement of musical notes, and the choruses which intersperse this dialogue being set to more formal music. This identity of musician and poet, constituting a two-fold "maker," was not continued in the case of subsequent Greek tragedians. It seems not to have been with Sophocles and Euripides as it was with Æschylus; and although it has been rarely that the musician and the dramatist have been combined in the same person, there have been instances in after-times where this has been the case, and it must be maintained that if the lyrical drama is to be at its best it must be the result of concerted work between two persons, if two are concerned in it. No musician can do himself, or his work, or his art justice who shall take a stereotyped libretto without the power to extend, or contract, or alter, or diversify it, according to the exigencies of his own view of the subject; and thus it will be found that where the musician-composer has not been also the text-composer, in the best instances, the poet has played into his hands, and modified the situations of his drama and varied his text according to the musician's casual requirements.

The principle of the Greek drama was continued in Christian times in a very remarkable and signal instance; that was a

religious rite to keep alive in memory the men and their deeds which were held sacred, and this, of which it is now to speak, appropriated the same means to the same end when persons and facts of another character claimed reverence. Gregory of Nazianzus, a town in Cappadocia, wrote a tragedy upon the Greek model, embodying the story of the Divine Passion, in which the chanted dialogue was interspersed with choruses; and we have at the present moment a genealogical descendant from this drama of the fourth century in the "Passion Play" represented every ten years at Ober-Amunghaus, save that the musical element has dropped out of the play, and the dialogue of the present day is spoken instead of intoned. Subsequently to the tragedy by Gregory, in the miracle-plays and the mysteries there was always incidental music, but not music connected with the action—music interspersed more or less to illustrate the situation or the sentiment of the text, but not to be necessarily or at all concerned in the presentation of the incidents.

We find, however, in the fifteenth century, a drama on the subject of "Orfeo," by Poliziano, for which Enrico Isacco, I believe of German birth, wrote music in Italy, but little or nothing as to the musical merits of this work has reached us. In the English drama, subsequently to this, music was introduced episodically, but with each seeming necessity for the satisfaction of the audience, that there are not a few instances where personages are brought on to the stage for the sake of singing their song, and not for fulfilling any incident in the story or taking any part in the action; such as the appearance of the two pages in the fifth act of "As You Like It." They enter to Touchstone and Audrey, and, at the invitation of those two, sing "It was a lover and his love," and having sung and having received the commend on their performance they leave the stage, and then the action goes on as if it had not been broken by their presence. This is, I think, an evidence that the audience of the time wanted the embellishment of music in the course of a long dramatic performance. More directly connected with the action of the scene is the music of the Witches, introduced in "Macbeth," and this music, with the daggered text to which the greater part of it is set, was previously in the play of "The Witch," by Middleton, and it had attained such general esteem that when "Macbeth" was to be produced it became almost a necessity, or Shakespeare must have felt it as an entire necessity to surround his Witches with music, because this class of being was in the public mind thus associated, from the success of the preceding play; and no music could so well fulfil his idea as that which already existed, and the verses to which this music is set were transplanted entire into the great tragedy of our greatest poet.

Now comes into consideration the real foundation of the modern opera, and this has an intimate connection with that great movement for art, the Renaissance. Letters, paintings, sculptures, had received already the benefit of the revival of classic principles, and then it came to be considered that the same view might be applied to music. The tradition was abundant—nay, we have written evidence—that music had been the most powerful means of impressing on the audience of the Greek theatre the poetic power of the plays. The music of the period at which we have now arrived, namely, the end of the sixteenth century, was either the scholastic music now described as polyphonic, of which a very main interest lay in the imitative nature of the part-writing, or else the music of the people, which may be best described in our English idea of the ballad, that is, the recitation of a story to music, and many reports of one very common melody.

None from these two styles of music, declamation and expression of the poetry were necessarily excluded. In the fugal, or tenor, or imitative style, which prevailed as much in the madrigal compositions as in the music for the church, it would be impossible to express or to declaim words, since the many voices would be singing different words at the same moment. In the ballad, there could be small expressions at a time that was to be again and again repeated through a long and various story, which might comprise incidents of gaiety, of gravity, of regret, and of rejoicing; and the strain that could either be in the ballad-tune or in the polyphonic composition of embodying character, would be a general resemblance to the nature of the subject, but by no means to the proper declamation of the words.

Then a society of gentlemen, men of letters, lovers of art, was formed in Florence. Count Verucio was at the head of this. Vincenzo Galilei, father of the astronomer, and a musician of the name of Corsi, were among his associates. These formed the idea of restoring to music that declamatory character which it is supposed to have held in the Greek tragedy. They employed a poet, Ottavio Rinuccini, to construct some verses with a view to their musical declamation, and they engaged, at first, two singers, Giulio Caccini and Jacopo Peri, who were, from the point of musical composition, little skilled, but were well adapted for the task proposed, from their habit of singing and from a singer's point of view regarding the enunciation of the words, and the capabilities of the voice for vocal expression.

You, sir (addressing the Chairman), and many other persons here, can very well estimate how important it is to one who undertakes the task of setting poetry to music to feel the singer's quality in approaching his subject, and from a singer's point of view he may be able to do a higher justice to his music and to his verse than any one could who had not the

habit of singing or the experience of listening to singers. It was in 1590 that the first productions of these singer-composers were privately performed, at the house of the gentleman I have named.

There also came upon the scene Emilio del Cavallieri, a Roman by birth, who was an educated composer; and he brought to the task a theoretical knowledge of musical principles. Now it is to be considered that this term "lyrical drama" is not necessarily, or by any means, limited in its application to secular subjects; and whereas the performances of Peri and Caccini were in the first place monologues, Cavallieri wrote a continuous drama, interspersed with dancing and action, which was represented with scenery, and which was not on a Biblical story, but on a religious theme. "La Rappresentazione di Anna e di Cajo" was performed in the sanctuary of a church, and chanted at the head of the dramatic oratorio, distinct from *dilatato oratorio*,—this being exemplified in works at present familiar by the "Passion" of Bach and the "Messiah" of Handel, whereas specimens of the dramatic oratorio are many other works of Handel, which are always described by himself with the epithet "oratorio or sacred drama," such as "Samson," "Judas Maccabeus," and "Jephtha." The composer last named had so keen a sense of the dramatic treatment of his subject, that he wrote always in his scores such stage directions as would be given for a theatrical performance of the works in a theatre, describing the attitudes and exits of personages, and other actions bearing upon the conduct of the story. Many and many such instances are to be found throughout the MSS. of Handel, although they are, I believe, always omitted in the printed copies of the music. They are still, however, to be found in some of the separate librettos, and I think they clearly show how strong was his sense of the scene, although he wrote with the view to his pieces being sung without the adjuncts of theatrical effect.

Another composer, who was also a celebrated musician, and who had already gained great celebrity by his compositions of madrigals, but greater celebrity by his introduction of some important new principles in musical theory, was Claudio Monteverde, a man of the highest note in the history of art, as having been the first person who felt the natural laws of music as distinguished from the artificial rules, which up to the time of his appearance on the scene of history had always prevailed. He it was who first employed what must be called the natural discords—those discords, namely, which, consisting of the notes of the harmonic series, are naturally produced, as distinct from those other discords which can only be satisfactorily heard when their harshness is mitigated by the formula of preparation. These let us call artificial discords;

those which Monteverdi originated, natural discords. And modern music may be said to date from his first use of the chords in question, the best known of which and the most used is that ever-ready chord of the dominant seventh; and when once the principle of its use was understood an entirely new field was open in the range of the composer's art, and all time since has been most valuably, most beautifully engaged in the cultivating of this field. And how great, how noble, is the harvest it has yielded! Must we not feel that the mind of the artist is the virgin-mother, from which proceeds the divine child, that, passing through the world, bears its burden of beauty, and this is scattered freely among those whose hearts of faith enable them to receive and perceive the bounty that is offered them?

Monteverdi composed first an opera called "Artaxerxes," of which but a small fragment remains. This was in 1609. It had a very great success, in consequence of which, and by its encouragement, he wrote in the following year an opera which has been preserved entire, having been contemporaneously printed, "Orfeo." The work is highly remarkable in the fact that it employs a very large number of instruments, that it not only aims to declaim the words and portray the dramatic situations, but to characterize each individuality of the action, and distinguish Orpheus from Eurydice, both of them from Pluto, and every other person in the drama; and it is remarkable as giving us the oldest extant attempt at what we now call an overture—an instrumental prelude. A most remarkable piece is this said prelude, comprising nine long bars directed to be played through three, and entirely consisting of the one chord of C from the commencement to the end. This would seem an extravagance, but there is a composition which but a few years ago was first publicly performed, and which has drawn the attention of many musical critics and the admiration of some, that has for overture what amounts to five pages of powerful arrangement, and consisting wholly and exclusively of one chord of E \flat , which is mostly dispersed over the melodic figure that is employed conspicuously in Mendelssohn's overture to "The Beautiful Melusine." I was once present when an admirer spoke of this composition as sublime, and a bystander said he thought it went a step beyond. However, that is by the way. It is only to show that Monteverdi, in his originating the overture, is his having a large orchestra, in his intermixture of chorus and solo, in his giving substantial characterization to each person in his story, indicated, although not in those early days fulfilled, but indicated all that dramatic art can fulfil in music.

Shortly after the time of Monteverdi appeared a Venetian of great merit, whose name is further as Cavallo; but this is an abbreviation or pet name given by the world, and is not his

real patriotism. He had very great success in Venice, and seemingly from very great desire; and so great was his success there that he went to Paris after a time, to reproduce some of his works.

Having named Paris, we now come to a very important phase in the history of the musical drama. We have to speak of Giovanni Battista Lulli, a born Florentine, who went to Paris as a page to a princess when thirteen years old; who, because of his ugly face and awkward manner, was thought unfit for the position to which he was called. He was driven into the kitchen to act as scullion, but so greatly entertained his fellow-servants by his performances on the violin, that his fame for musicianship rose upstart; and here really may be felt to have been an illustration, or an anticipation, of true "high-life below stairs," since, with Lulli in the kitchen, there was a higher art than was to be found in king's chambers. Lulli was called to take part in the music of Louis XIV., and such excellent part did he take that a separate band of twenty-four violins, which I suppose must have included the bass-viol as a branch of the violin family, was appointed for him to direct, for him to teach, and for him to write for. One result of this was that when Charles II. returned to his throne in England, after his sojourn in the Court of Louis XIV., he set up also his royal band of musicians, also consisting of twenty-four, with John Banaster as its leader; and from that may doubtless have come down to us the nursery lines of "Four-and-twenty lillies all in a row." Now before the King it was very frequent to have performances of ballets. There had been in the latter part of the sixteenth century ballets interspersed with choruses performed before the Court, and Lulli was engaged to compose the music for a continuation of this line of dancing dramas.

It is worth while to rest here a moment on the somewhat remarkable fact that whereas France is regarded as the source of taste—fashions are drawn from France, and our standard of ideas and diction is placed in the French capital—the French themselves have in a considerable degree related to Italy for their music. Thus, the originator of the French opera springs from those ballets for which Lulli composed the music—Lulli, an Italian. Previous to that, Cardinal Mazarin, whose name was abbreviated and is now frequently pronounced in its French form, had introduced some Italian operas in France; and long subsequently Frobenius was invited to Paris to compose operas, and to stand at the head of the most important and significant controversy on the merits of the musicianship of two nations, and to arbitrate the taste of the Parisians. There was then founded the Paris Conservatoire, of which Paer, an Italian, was the first principal, and Cherubini succeeded to him. Thus, however great power

the French have had in spreading their principles of taste, they have been modest enough to derive these from whatever good sources they could draw them. The ballets of Lulli were precisely extended. Some operas by Cavalli were performed by the French Court, and Lulli composed dances for insertion in them. Then was given to another composer, Cambert, and to a librettist, Perrin, a patent for the performance of operas in the institution then called the *Académie Royale*. The King, after two years, withdrew the patent and gave it to his favourite Lulli, who was so great a favourite, indeed, that he was not intrusted alone with musical affairs, but he was appointed private secretary to the King, and held other functions of great importance. Now because the French opera arose from ballet, it has never been entirely exempted from it; and there will be presently occasion to show, how imperative became in the constitution of French grand opera the mixture, or intermixture, of singing and dancing. Lulli's operas consisted of music throughout, either vocal or instrumental.

A great light in Italy, Alessandro Scarlatti, in 1686, produced at Rome his first opera, and this is said to have been followed by 100 others, a stupendous number in sound. But it is to be borne in mind that the operas of that day were neither of the length nor of the elaborate structure of those of later time. There may be dated from this period the twofold school of the French and the Italian opera, with Lulli, the Italian, at the head of the French school, and Scarlatti, the Neapolitan, at the head of the Italian school. But the rest of the world was not entirely inactive in operatic composition up to this time. We find in 1687 a translation of one of Racine's lyrical dramas, "Dafnis," set to music by Heinrich Schütz, in Germany, but it appears to have been a solitary work. About the same period Nicolo Lulli, an Italian, settled in England, and wrote music to a masque by Ben Jonson, which music comprised the entire of the text. This masque, however, like those first Italian attempts, was not aimed at public performance, but was privately represented in the court of Charles I., by persons of the highest social condition.

Very much to do with the growth of this declamatory style of music must be considered the cantata, of which Corelli, in the first instance, produced many remarkable specimens. The cantata was at first a term applied to compositions for a single voice, which had an instrumental accompaniment—that is, musical declamation with rhythmical melody. After Corelli, Stradella, Francesco Rossi, and others obtained great distinction in the composition of cantatas. The word has now come to have a different application, but such was its original meaning. These detached pieces were always of a dramatic character, although they were monologues. There are in the spoken drama instances of pieces that are entirely monologues.

and there was in the latter part of the last century a fashion in Germany for such recitations interspersed with music that aimed to illustrate the passions set forth in the text, and this music would either separate the sentences after the manner of interludes, in what we call accompanied recitative, or sometimes very softly accompany the spoken declamation. These recitations would not bear the name of cantatas, which of course signifies "song," but they are the spoken analogy to the cantatas of Scuderi, Carissimi, Desmare, and persons of that class.

Let us now turn to the opera in England. It is a remarkable and an important fact that the first opera in England was represented in the time of the Commonwealth, in 1656, by the express licence of Cromwell granted to Sir William D'Avenant, for performance in Rutland House, Aldersgate, of an opera in five acts, called the "Sings of Rhodes." The libretto of this is extant, but unluckily none of the music. The title-page states that each act was set to music by a different composer, and the opera was throughout, from first to last, entirely sung. Besides that this was the first English opera, there is another remarkable circumstance connected with it, that in the principal character, Isabella, the first female performer that ever was heard upon the English stage sustained a part—Mrs. Coleman, the wife of Dr. Coleman, who composed the music of one of the acts. Thus, from the Puritan time in England dates the opening of the English opera, and that very important introduction into musical performances, the beautiful sound of the female voice.

Directly after this appears Purcell on the scene. In his youth—say his youth was all his life; he died young, but he was in health blossom throughout his entire career—but in his earliest days he wrote an opera, "Dido and Eneas," which was on the Italian and French model, being entirely sung throughout. Later he wrote for the public theatre ("Dido and Eneas" having been composed for a private school), and then the so-called operas were spoken dramas interspersed with music. In this last I think there is much to be regretted for the art, since, whenever there is in the scanty materials afforded him any opportunity for dramatic painting for personal characterisation, or for illumination of the scene, he greets this with a music-band that might well have manipulated the materials of an after-supper. He was closely hampered by principles announced by the chief dramatic poet of the time, Dryden, who alleged that on the stage the use of music should be limited either to mythological beings or to supernatural agencies; and thus, in the so-called operas of Purcell, either enchanters, or spirits, or gods, or goddesses, or as a great stretch of the supernatural, mad men and women, are the only persons who appear as singers. Thus in the operas of the

story of "Don Quixote," the scene "Let the dreadful engines," and the scene "From my bowers," are assigned respectively to the poor girl who has gone mad for love, and to Cardenio, whom Don Quixote encounters in his phrensy among the mountains.

Shortly after the time of Purcell's death, but contemporaneously with his later writings, appeared in Germany a most important hero in our history, Reinhard Keiser, who produced an immensely large number of operas, which had very great success, firstly in Hamburg and subsequently in Berlin. In Hamburg he directed the theatre, and as director he engaged Handel to play in his band, in the early youth of that musician, who, while holding his place among the second violins, still had opportunity to convince the world of his dawning powers as a composer, for there in Hamburg he wrote his first opera.

The principle upon which the opera had first been instructed now began to degenerate. The art of the singer had greatly advanced. The power of execution, of rendering florid passages with a volubility that seems now almost incredible, since all but unthinkable, made it necessary that the composer of an opera had to insert pieces for vocal display rather than for dramatic propriety; and one finds in the operas of the period that the action scenes is carried on in recitative, and this action is interrupted by songs when the personages have to stand and either address the audience, or address one another, while if other persons have to listen there is the exceedingly difficult task of filling out the scene where they have no words and no notes to utter.

The opera now became more and more artificial. The songs or arias were arranged in five distinct classes. There was the *aria cantabile*, which was for the most part a grand pathetic adagio, containing very much florid ornament, but rather as a grace than as matter of conspicuous execution. Then there was the *aria di parlamento*, which corresponded to a great extent with what is now understood by a *cavatina*. Then the *aria di mezzo carattere*; then the *aria parlante*, and in this one had scarcely ever more than a note to a word, and it approached more to the character of declamation than any of the other classes; and lastly the *aria di bravura* or *d'agitata*. It was required in an opera that every character should have two specimens of each of these five arias, that no two of the same class should ever come in succession, and that each act must have its aliquot portion of the sum total. Thus it will be readily seen that the dramatic action was a matter secondary to the exhibition of the five different qualifications of a singer, and the story of the drama was of minor matter to a vocal display.

We find in Handel, and in others whose names pale under the brilliant lustre of his, the power of dramatic characterisation.

We find a different class of music and form of phrases and lyrics assigned to the several personages in his drama; and we find this, which seems to me to have been a new element at his time, for I have not been able to trace it earlier, combining several personages with their individual characters in one composition. Thus, in "Acis and Galatea" there is a trio, where two lovers utter their words of tenderness to one another, while the Cyclop expresses his rage that Acte stands between him and the gratification of his monstrous love. There is a "Semele" a quartet where the four personages are strongly individualised. There is a "Jephtha" a quartet and quintet; in the quartet especially there is the anguish of Jephtha that he must sacrifice his child, there is the anger of his wife that her daughter should be torn from her, there is the devotion of Iphis who feels that she is fulfilling a divine duty in becoming the willing victim of her father's oath, and there is the betrothed lover of Iphis grieving at the prostration of his fondest hopes; and all these characters are personified, each in a separate and distinct phraseology, and they all sing together. Now in this quality, first of all, of giving different characters to different persons, and in combining in one performance in simultaneous action these several characters, I feel that dramatic music excels every other class of vocal composition. We may talk of the sublimity of the oratorio, and in so far as the oratorio is based upon sublime subjects its expression of the subjects may be sublime. But the dramatic oratorio is capable of all the sublimity which can be infused into dramatic oratorio, and it can have this great quality of personification at the same time. It is to be regretted that such rarely occurs in the structure of oratorios, but where it does so occur it gives a most valuable resource to the composer, and opens to him a rich field for musical expression.

We will now advance to the period of Gluck. He began his career as a writer of Italian operas. On this Italian model (for then it was modern) model he recast the whole story in what they call the "dry recitative" (*recitativo secco*) or recitative, accompanied only with the harpsichord and with the bowed instrument to sustain the lower notes, and interspersed this with one or other of the five classes of airs. He attained great celebrity, in consequence of which he was engaged to write for the King's Theatre in London. Now he supposed this, his works being undervalued, a patriotic world supply all that was necessary, and therefore his opera, "La Caduta de' Giganti," was a collection of pieces from several of his other operas adapted to a new text, and the work produced small effect. This brought upon him the conviction that music, to fulfil its highest functions, must be written for and written to the situation in which it was presented; that an adaptation of old music to new words or new words to old music misrep-

anted both, and that the true dramatic qualities could only be fulfilled if words and music were written for each other, and when these both belong to the situation to which they were designed. Such indeed was the idea which had been generalised by the Florentines in their institution of recitative and those of the opera. Such had been set forth at length by that distinguished Venetian amateur, Benedetto Marcello, who in 1726 published an essay on dramatic music, "Il teatro alla moda," in which he satirised the vices of the dramatic music of the time. It became, hereafter, the province of Gluck to put the theory of Marcello into practice. Gluck, for many years, pondered this new view, although in its novelty it was but a revival of the treatment of the dramatic element in music. He met with a poet, Calzabigi, who entirely agreed with him in his perception of dramatic propriety, and wrote for him and with him, and into his very thoughts, the text of the opera of "Alceste."

This was produced in Vienna, in 1767. It was an extraordinary change from what had been heard before, and it met with very great success. In consequence of its success Gluck thought that still higher things were possible to music than were accomplished in it. He knew of the very great resources of the Paris theatre, beyond those in any other capital; he knew the great powers of scenic effect, and he knew how all the accessories then incident to the stage were to be met with in Paris. He went thither for the sake of extending his practice in the composition of opera, and he brought there formed his opera of "Iphigénie en Aulide" with success, which fully realised all his dreams. But there he was bound by the exigency of the French opera of intermingling with its music very much dancing. He met with the famous Vestri, another instance of French success to Italian genius, for although the French is the dancing nation of all the world by universal admission, the great Vestri, who bears the title in French annals of "Le dieu de la danse," was Italian here, and added the "a" to the end of the name only after he had been some years settled in France. When then "Iphigénie" was to be produced, he went to Gluck to make arrangements for the ballet. He said he must have his gavotte, he must have his *Allegretto*, he must have his *bourrée*. Gluck exclaimed, "Agamemnon never danced a gavotte!" Vestri replied, "So much the worse for Agamemnon; the people of Paris cannot witness an opera without one"; and consequently such dances were necessarily inserted into the drama, which represented the case of Agamemnon when he must kill his daughter, in order to propitiate Diana for her winds to carry the Greeks to Troy.

We find in Handel the representation of several characters contained in one piece of music, but they have still the superior quality of singing so many voices together, and never address-

ing one another. A composer who is only known by name, for I have never been able to meet with any specimen of his works, Legnani, is said to have, in some operas he wrote for the small theatre in Naples, represented continuous action in music, and to have had great success. Niccolò Piccini, afterwards the rival of Gluck in the great Paris musical warfare, extended the idea, and in his opera of "Le lettere Figurate" there are specimens of long-continued music during a varied action, where the characters address one another, where sometimes each sings his own sentiment and where others sing theirs, and where this particular element in lyrical composition is brought to a very high standard. This opera was set to a text which was founded on our Richardson's novel of "Pamela." The opera had an immense success, and, in consequence of it, Piccini's fame was very greatly extended.

The particular combination of characters and continuation of action has its highest example in the masterpieces of Mozart, and we need but refer to the great finale of "Don Giovanni," to the finale of each act of "Figaro," and to the sextet in the second act of "Don Giovanni," to perceive the utmost to which the dramatic musical art has yet attained; the utmost to which it seems possible human genius can ever reach. The only probability that dramatic music may exceed these examples may be in the choice of a loftier subject than the gallantries of Don Giovanni and the intrigues of the Count's valet in "Figaro." But with the application of such resources to a great tragical or a great religious subject, the opera is capable of becoming the greatest development of the musical art. It is especially to be noticed, in these works of Mozart, that all the principles of musical construction are marvellously fulfilled, and that while they illustrate the action, while they express and declaim the text, the musical composition is in itself so complete and so perfect that were the words withdrawn we should still be delighted to hear the music; were the action imperceptible, we still would feel his musical sense enticed in the admirable places which these works present to it.

I have now to speak of a particular quality in dramatic composition that is much wanted of late as a novelty of our composers, and has been characterized by the German term of *Leit-motif*. The rise of this may grow to an abuse, and one must bear in mind the remark of one of the humorous journals on some more or less recent performances of the kind, that the Portuguese proverb *Byzta* quoted may be applied to some of the works in question, and we may say that "Valhalla is paved with good motives," and those motives are not always soaked. One finds a particularly strong anticipation of this allusion to a musical idea that has been previously stated in the first finale of Beethoven's "Fidelio." In the scene in this

opera where the governor of the prison, Pisarno, requires Rocco, the jailer, to fulfil his dreadful purpose upon the prisoner Florentini, he has described the contemplated murder, and, after exclaiming, "Eun Soreo," sings to four notes, with terrible emphasis, "Ued ar veramento." In the finale, Rocco is pleading for the prisoners to be allowed to range the prison-yard, and enjoy for the first time the fresh air of heaven. Pisarno is supposed to find them at large, and demands how has this man dared without order to set them free while all slumber? No word is in the text replied; but in the orchestra are those four notes by which we read the conscience of Pisarno—that he feels he has condemned his intention to murder his victims—that he has made this man his confidant, and of course, as he has made him his confidant, he cannot deny him the privilege which he has used of giving the prisoners a few moments of freedom.

The same appropriation of a musical idea to the constant expression of one speciality may be noticed in the "Frischheit" of Weber, where the influence of the evil spirit is always indicated by that particular tremolo with the soft notes upon the drum, together with the pizzicato for the basses. Again, in his "Euryanthe," by that peculiar passage which occurs in the second of the overture in almost every time than the rest of the movement with muted violins, which is always used in the opera when allusion is made to that ghost story, which is the reason employed to spare the character of Euryanthe. Let us look farther: there is surely to be met with in an Italian opera a mad scene, where the jester draws his down her bush hair, but she is sure to sing some portions of the love duet she had with the tenor in the first act. And in all the operas of this century, where it has been found convenient, is displayed a natural, but not a slavish use of this resource.

The resource is not confined to dramatic music. It may be said to be an application of the same thing, that is setting over music for the Church the recurrence of a musical idea at a later portion of the text, which idea was previously heard with other words, is employed by the composer to throw the light of that former text upon the latter expression. Thus, for instance, we find in some settings of the canticle "Te Deum" that when in the latter portion of the hymn the words come, "Dey by dey we magnify Thee," the same musical phrase is appropriated which is set to the words "We praise Thee, O God." To magnify, to praise, are one outpouring of the heart; and the sense of this magnifying and worshipping, in the latter portion of the hymn, is appropriated and made more forcible by such musical reference to the corresponding words at the outset of the canticle. And in such manner as this the principle of recurrent musical ideas is to be used, not as a pantomime trick of bringing up a stage goddess, but as a wary,

high medium of enforcing the musical meaning. Further it is not confined to vocal composition alone, but I maintain that in the Symphony in C minor of Beethoven, when in the last movement the theme of the scherzo recurs, this is quite as much an application of the principle of the *Leit-motif* as anything that has occurred in recent opera. This is to recall in the midst of the grand heroic movement whatever sentiment the composer designed to express in the music of the scherzo, and this was not original in Beethoven, because in a Symphony of Haydn in B, which is very little known, in precisely the same manner, and in precisely the same fashion, namely, in the middle of the last movement, there occurs a phrase from the midst of the same symphony.

Again, in the first quartet of Mendelssohn for violins, at the end of the last movement occurs that lovely melody in E \flat which opens the first movement. In the second quartet he begins with the melody, which he had previously set to words, and the reference to which setting is a very strong index towards comprehending the expression intended by the whole quartet, and the quartet terminates with the same song set forth at length which is only hinted at in the beginning. This is the Quartet in A minor. Then again, in his *Octet*, there recurs in the midst of the last movement a portion of the scherzo which is interwoven with the themes of the last movement, most ingeniously combined, and the one is made to form a counterpoint to the other. Here again we find this application in instrumental music of the element that I think is very valuable, but by no means a recent acquisition in the operatic treasury.

We have to distinguish now between what the French call their grand opera and their comic opera, understanding that the term comic does not signify as in ordinary speech matter for jest and laughter and fun, but the comic opera corresponds with what was here called the *ballad opera*, or the opera of the days of Purcell, an opera, namely, in which there is song, but in which much is spoken. And this has in France a very curious origin. A patent for the performance of the lyrical drama was granted specially to the *Académie Royale*. It was therefore forbidden to sing on the stage of any other theatre. These were, however, performed at the *Opéra Comique* spoken dramas, which were interspersed with songs, these songs were set to popular tunes, and when the situation for their insertion occurred a scroll was displayed, on which the words were written at length and in large characters; the band played the tune and the audience sang the song. From this has been developed the *Vaudeville*, and thence the *Opéra-Comique* of the French stage.

Corresponding with the *Opéra Comique*, which has—more than our ballad operas possess—some occasional largely

developed piece, is the "Ring Cycle" of the German stage, and it is to be remembered that it has been so highly developed that many of the best works in the German school are of this structure. Such are the "Sieglinde," the "Zauberflöte" of Mozart, the "Freischütz" of Weber, the "Faust" of Spohr, and many others which might be named.

It is in the last fifty years only that the composition of the highest class of opera has been started in England; and although we have lost some of our dearest friends who have had best success in this department, there are still some who aim at dramatic composition, and let us hope that they will have the opportunity, as no doubt some of them may have the talent, to add yet glories to the lyrical drama. I would lastly remind that the musician's mind, the clouds which reflect its light poetically broken into countless colours, and which pour their robes upon the earth in worms, and strengthen, and nourish man's hearts with the wealth of harvest—the harvest of the human mind.

The CHAIRMAN said that at that late hour he would not occupy their time, but the very first thing he would ask them to do would be to accord a hearty vote of thanks to Professor Macfarren, which he was sure they would do with pleasure, for the admirable and splendid review and history of the lyrical drama which had been given from its earliest period down to the latest development. He was sure that all present had listened to it with interest and attention, and he only regretted that the time had so far advanced as to preclude any lengthened observations on the subject.

The resolution having been carried,

The CHAIRMAN said he hoped that during the next session Professor Macfarren might favour them by coming forward again and taking up this theme and continuing it, not perhaps at so great length, but in order to give them an opportunity of asking him any questions, and thus illustrating the subject still further.

Professor MACFARREN briefly acknowledged the compliment, and the proceedings terminated.

THE NEW YORK PUBLIC LIBRARY

 3 2044 044 288 314

DATE DUE

JAN 26	1905		
<i>MAH</i>			

REFUSE

PAID/PAID, B. L.



