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Proceedings of the Society.

MUSICAL EDUCATION COMMITTEE.

The following is the evidence of Mr. Lucas, Principal of the Royal Academy of Music:—

The Committee met on the 22nd May, at 3 o'clock, Mr. HENRY COLE, C.B., in the chair. Present—Sir John Harington, Bart.; Sir G. Clerk, Bart.; Mr. Bowring, C.B.; Mr. Bowley; Lieut.-Col. Scott, R.E.; Capt. Donnelly, R.E.

Mr. C. LUCAS gave evidence as follows:—

1. You are Principal of the Royal Academy of Music?—I am.
2. And, with the concurrence of the Directors of the Academy, are so kind as to attend here to give us information as to the working of the Academy?—Yes.
3. You hand in (referring to a document in his hand—See Appendix A., p. 572) a statement of the income and expenditure of the Royal Academy of Music for the year 1864?—Yes.
4. Does this include the parliamentary grant of £500?—It does.
5. Also a statement of the amount of tuition given to each student per week?—I may explain that more fully.
6. How long have you held the office of principal of the Academy?—I was appointed to the office in July, 1859.
7. Who was your immediate predecessor in that office?—Mr. Cipriani Potter.
8. Was he the first principal of the Academy?—No; Dr. Crotch. I was myself a pupil of Dr. Crotch at the Academy.
9. Your prospectus shows that the constitution of the Academy consists of a president, four vice-presidents, thirty directors, and a committee of management?—Yes; that is provided by the charter.
10. And it appears the Academy is incorporated by Royal Charter?—Yes.
11. The date of which is 1830, but the Academy was founded in 1822?—It was started in 1822, but was opened in 1823.
12. It also appears an attempt was made in the year 1720, to start a national school of music, but that its aim was simply the introduction and support of the Italian opera?—They called it the Academy of Music at that time. When what is now her Majesty's theatre was first started, it was called the Academy of Music, when Handel, Bononcini, and others, wrote operas there. It is merely from the similar name.

13. Would you put in evidence the prospectus of the Royal Academy and the regulations for its management?—Yes. (See Appendix B., p. 572.)

14. Where are your present premises?—Tenterden-street, Hanover-square.

15. Have they always been there?—Yes.

16. And always of the same extent?—When we had boarders they were more extensive. We used to have boarders.

17. You have no boarders now?—No.

18. Why not?—The expense was too great.

19. They are simply day students?—Yes; male and female.

20. Are the premises convenient?—No; very far from it.

21. Is there space sufficient?—No.

22. Do the students for the most part live in the immediate neighbourhood of the premises?—No; they live in various parts. That is one of the great difficulties we have in arranging the periods of their lessons so as to save them time. Supposing they live three or four miles off, it is very awkward.

23. What are the hours of the students' attendance?—Generally speaking, from ten till four; sometimes from nine till four.

24. Do they get refreshment on the premises?—No.

25. Must they go out for refreshment?—Yes; or bring it with them.

26. Have you convenience for refreshments?—No; no special convenience.

27. Do you find inconvenience from the want of such accommodation within the premises?—The lessons are arranged now so that no pupil need be there more than four hours per day. Supposing the pupil were in a singing class, he would be engaged in that for two hours, in the piano class one hour or two hours, and then he might go home and practice. Then another day they go to something else for a similar time. The classes are so arranged; for instance, if a person has a singing lesson for ten o'clock, he remains with the class afterwards for about two hours. The system is this:—Every pupil gets an individual lesson, but it is all done in classes. I put in a statement (Appendix C., p. 573) which is a correct account of the number of lessons each pupil receives per week.

28. For what length of time is the individual lesson?—Half-an-hour. It is in this way:—If the principal study be the pianoforte the pupil has an individual lesson for half-an-hour; but the class consists of four pupils, and each pupil would be present the whole time, hearing the remarks of the teacher. That is a general rule, particularly if all the pupils in the class are about equally advanced. It is practically having a lesson of two hours, but individually the master devotes half-an-hour

to each pupil. Then they go from that to singing, and receive a lesson for half-an-hour each in that class.

29. Do you mean that every pupil has half-an-hour's individual instruction?—Yes; twice a week, excepting in harmony, Italian, and elocution.

30. In those they are taught all together?—For instruction in harmony, we have four pupils in the hour.

31. Do I understand you to say that, of the pupils learning singing, or instrumental performance of any kind, each one has half an hour's personal instruction?—Yes; twice a week.

32. Are the teachers numerous enough to admit of that, or the pupils too few?—It is, perhaps, both.

33. How many pupils at the present time are learning singing.—Nineteen ladies and five males—twenty-four in all, as principal study. Others learn singing. The statement of the classes and professors' attendances for this term answers this in detail.

34. Receiving individual instruction in the way you mention?—Yes; I should wish to explain a little further about their studies. It is this: If a lady goes there and learns the pianoforte as the principal instrument, she has two half-hour's individual instruction, besides attending the class two hours. Then she has a singing lesson and lessons in harmony twice a week. Then, twice a week she is obliged to attend a sight-singing class and orchestral singing.

35. Whether she have a voice or not?—Yes.

36. Do the pupils make choice of their instrument themselves?—Yes; they make their selection.

37. For instance, if a pupil chooses the violin for his instrument, he has to attend a sight-singing class?—Yes; and the orchestral and choral practices. The difference with ladies, who make singing their principal study, is, that they have but one lesson per week on the pianoforte, and one lesson per week in harmony; but then they have Italian twice a-week, and elocution once a-week; which makes the number of hours of individual instruction about the same; and they have also to attend sight-singing, and orchestral and choral practices. It is the same with the male pupils; if the violin be the principal study, they have two lessons per week on the pianoforte, and in harmony, and they attend the sight-singing practice—that is to make them able to read music well.

38. What do you do in the case of the pianoforte players?—They rehearse solos and concertos, with accompaniments. The orchestral and choral practices are on Tuesdays and Fridays. The pupils are brought to those practices to make them acquainted with hearing an orchestra.

39. You make them singers for the nonce?—If they do not play in the orchestra they sing in the choruses.

40. We quitted the subject of the premises rather abruptly. May I ask what is the present tenure of your premises?—The lease has expired. We are now tenants from year to year.

41. Subject to the usual notice?—The landlord, I believe, has no particular wish to disturb us. The fact may be stated that the premises were originally held under a long lease, which has now expired, and we are now only annual tenants.

42. Are you responsible for repairs?—We were under the lease.

43. But you are so no longer?—That depends perhaps on a matter of law.

44. It is no part of your present current expenditure to provide for the repairs of the premises?—We have expenses for repairs.

45. Do you expend funds for repairs without the security of a lease?—Not since the lease has expired.

46. Have you any projects in view for the alteration of the premises?—That is hardly possible; we want both funds and space to do so.

47. Then you have no intention of increasing the accommodation of the present premises?—No; most decidedly not.

48. But you wish for other and better accommodation than you have now?—Decidedly.

49. Does your landlord hold out any hopes of improvement of the present premises?—No; not at all.

50. Are you situate in a neighbourhood you altogether approve of?—No.

51. Perhaps the contrary?—Yes; very much so.

52. I gather that last year there were 59 pupils in the Academy; and this year there are 71?—Yes.

53. Is the course of instruction at the Academy divided into sessions?—We have three terms in the year, of about thirteen weeks each. It used formerly to be divided into four quarters; but we found the attendance very small in the summer months, and, therefore, we have a long holiday, like most of the colleges.

54. We hear that in 1864 you had fifty-nine pupils, and that you have now seventy-one. What has been the average number of the last few years?—They have varied from sixty to eighty. I think on an average we have about thirty come every year and thirty go away.

55. In the early history of the Academy, what was the average number of students?—When the Academy was first opened I was myself among the first pupils, and at that time there were eighteen males and eighteen females.

56. After it got into full operation what was the number?—I have known, I think, as many as 150 pupils at a time.

57.—Has there ever been more than 120?—Yes; I think so.

58. I should like to know what is the maximum number?—I will endeavour to give it you.

59. I understand you to say that there is orchestral and choral practice every week?—Twice a week.

60. Of what pupils does that orchestral practice consist?—At the present moment we are very deficient in wind instruments.

61.—It appears from this return which I hold in my hand, that there are only three pupils in the Academy now who are learning stringed instruments, and no pupil who is learning a wind instrument?—There are only three making the violin their principal study, but several others learning that instrument, and some wind instruments as second studies. (See Appendix C.)

62. Are you able to make up a complete orchestra out of the present pupils of the Academy?—Not complete; we do as well as we can.

63. Can you tell me off-hand how many of the pupils are available for the orchestra?—I should think we have 18 or 20; that is about what my orchestra consists of at the present moment.

64. There are only 5 male vocalists and 17 male pianists, therefore they must be taken principally out of the pianists?—Yes.

65. When you speak of the orchestra, do you include voices and all?—Yes.

66. What I want to arrive at is how many male pupils you can apply to instruments in your orchestra; I do not mean singers?—I should say at least 20. For instance, if the piano is the principal instrument of a pupil, he is obliged to learn an orchestral instrument as well. I have one who plays the flute, another the oboe, two others the violin, some the viola, others the violincello.

67. Do you consider that an advantage in their education? You are obliged from want of funds, apparently, to make up an orchestra in the best way you can, and therefore you bring the pupils into the orchestra; but if you had sufficient orchestral pupils, would you by preference bring in the pianoforte pupils also?—Most certainly, for this reason; however little they may know of the instrument, if they get into composition they will know how to write for the instruments. For that reason every pupil is allowed to take part in the orchestra.

68. Are you aware whether that is the practice abroad?—Not I believe in many cases.

69. Then it arises out of your necessity?—I think that is one of the advantages of the education in this country.

I maintain that students get a better musical education here than they do in the conservatoires of the Continent.

70. You think it an advantage to a pupil who wishes to devote his attention mainly to the pianoforte that he should play the flute?—Yes, I think so. If you look at the regulations of the Academy all that is explained.

71. The rent and taxes of your premises appear to amount to about £300 per annum.—Yes.

72. You say you have only a yearly tenancy of the premises. In the face of the enormous increase of rentals of houses would not that be a difficulty to the Academy in providing new premises, and might you not set aside a larger sum for the improvement of the present premises?—I think it might be difficult to get the accommodation we have now at the same rent; that is, to the same extent.

73. You tell us the accommodation is insufficient?—Yes; on account of the deficiency of funds we put up with many inconveniences. The premises have a less amount of accommodation than formerly, and we think we should have to pay increased rent for the same amount of accommodation elsewhere.

74. I hardly suppose these regulations are those by which the establishment is at present governed?—Yes, they are.

75. Then I apprehend there must be a mistake in your statement that those who wished to learn singing only are called upon to play an orchestral instrument?—Singing pupils have taken the double bass, for instance, but that is not insisted upon. Every singer is taught the pianoforte.

76. Then a pupil who wishes to learn singing must learn also the pianoforte, or some other instrument?—He must learn the pianoforte, but not necessarily any other instrument.

77. Are there any free scholars of the academy?—We have two scholarships which are entirely free, and two others which are partly so.

78. At Vienna the directors of the Academy have the power to give free education to pupils who have distinguished themselves at the commencement of their course, but it is a condition that they should be natives of Vienna. In other cases it is at their discretion to charge half-fees. May I ask if there is anything of that kind in the Royal Academy here?—I may state in the earlier days of the Academy a student, who has since become a distinguished professor, was boarded and educated for several years free; but that was at a time when the funds enabled the directors to do so.

79.—In some other cases has not a portion of the fees been remitted?—In some cases pupils have been admitted at reduced fees.

80.—I think it is desirable we should have from Mr. Lucas, if he will be kind enough to give it us, a statement of the particulars with regard to the system of giving so many lessons per week. I want to get a statement of the exact number of hours during which the pupils receive instruction in the week, and the tuition given to each pupil separately by the teacher?—You mean the number of pupils to each teacher.

81. Yes? and how often he attends.

81a. Do you think it would be advisable to pay the different professors by salary?—Yes, if we had funds to do so.

82. You have different rates of remuneration to your professors?—Yes.

83. Regulated by the *status* of the professor, and the time he gives to the Academy?—I may say all the professors are extremely liberal in their charges to the Academy. In the Conservatoire of Paris they pay their professors, not by the lesson, but by the year.

84. I want particularly to get Mr. Lucas's views on that subject. As it is now, the expense of each pupil is £45 a-year, or nearly that?—We have so arranged matters that the contributions of the pupils, as nearly as may be, disburse the remuneration to the professors; then there is their proportion of the rent and the general expenses.

85. It does more than that; because, by this paper, it appears that musical tuition alone costs only £27 a-year per pupil, whereas their subscription is £33?—Some of them cost more than they pay.

86. I understand you to say you do not pay your professors by annual salary?—No; by the hour.

87. You would prefer their being paid by salary?—Yes; I think so.

88. To pay by salary would be more expensive to the Academy?—Yes.

89. Have you considered the question of the desirability of paying the professors by salary with a proportion of the fees of the pupils, it being found in other public institutions a very convenient mode of payment?—No; I have not considered that question as yet.

90. As far as you know, is it true or not that professors of music habitually charge less for tuition at schools than they do for private tuition?—Some may, and no doubt do so. There are all sorts of prices paid.

91. And do they not charge now considerably less at the Academy than they do for private tuition? I believe some professors charge as low as half.—Yes; but, generally speaking, when they teach at schools, they have a sufficient number of pupils there to occupy them for half a day or more at a stretch; and then at schools they teach by the quarter or term; and they take the chance of all the pupils not always coming to receive their lessons.

92. Is it not to be presumed that professors would continue to teach at the Royal Academy at the same rate of remuneration as they are receiving now?—That is a question I can scarcely answer.

93. I presume there is some little distinction to be derived from being a teacher at the Royal Academy, and if it were established on a more important basis than at present, there would be all the more distinction in teaching there; therefore, I presume any reduction they now make would be made there?—I do not apprehend there would be much difficulty about that.

94. Are you able to state the essential difference between the Royal Academy of Music and the foreign Conservatoires?—First of all in the constitution and management. The management of the Royal Academy is explained in that prospectus, but most of the foreign Conservatoires are managed by the government.

95. Is that, in your opinion, an advantage?—In this respect, that the pupils are educated without charge.

96. Do you think it an advantage that the students should pay nothing for their education?—I think so. When this Academy was first opened, there were ten students elected on the foundation, and they were boarded and educated, and paid £10 a year. Then they admitted eight males and eight females, and these were called extra students. I was one of the first of that class, and I had to pay £30 a year.

97. You were boarded for that amount?—Yes; and educated.

98. Can you give any reason why music should be taught gratuitously when it is usual to pay for all else?—The principal reason is, as in the case we have been speaking about; generally you find great natural talent where there are no means to pay for the education. At Eton, Winchester, and other colleges, there are free students, why should not music be placed in the same scale?

99. But making the exception in favour of great talent—putting that aside for the moment which cannot pay for itself, and which it may be desirable to encourage, do you think, as a general principle, musical education should be gratuitous?—No.

100. You have mentioned the foreign Conservatoires. Is it not the case, in most of them, that the musical and operatic establishments are supported by the Government to a certain extent?—Yes.

101. In Leipzig there is no state subvention. The Academy is independent of the Government, and is supported by the subscriptions of the pupils and the dona-

tions of the public. It is the same in Vienna. It is the same, I believe, in Naples, Milan, and Brussels.

102. You have been asked about the foreign opera-houses being subsidized by the state; do you think they are better than our own?—In this country they are entirely the speculation of private individuals.

103. I mean the music itself; for instance, that the Italian opera of London is not as good as the Italian opera of Naples?—It is quite as good.

104. And as that of Paris?—Yes.

105. You think, notwithstanding our opera-houses are not subsidised by the state, we hold our own against those which are?—Yes.

106. As to the constitution and management, do you think there is any great difference between the management of the Royal Academy of Music and that of the foreign Conservatoires?—Yes; there is a great difference. The only Conservatoire I know much about is that of Paris. I was there at the time Cherubini was principal. He resided on the establishment.

107. You do not?—No; I have somewhat similar duties to perform. I have to go to the Academy to see that the masters and pupils attend, and all musical matters are referred to me, subject to the veto of the committee.

108. Does the committee meet often?—Once a week; but frequently in the autumn it is difficult to get the committee together; but when they meet, if I have made any memoranda, they are read over, and the committee either confirm or reject them.

109. Do the committee and the directors have joint meetings?—Sometimes; now and then. When there is business of great importance the whole of the directors are summoned to meet.

110. Latterly, I believe there have been some competitors to the Academy in teaching music?—Yes; the speculations of private individuals.

111. Do you think that may have interfered with the prosperity of the Academy?—Yes, to some extent. One is called the London Academy, where they profess to teach cheaper than the Academy; but the pupils do not get half so much instruction, and they are obliged to take private lessons, as they do in Leipsic. They pay £12 a year. I was speaking this morning to a person who was educated at Leipsic, and I found that the pupils there do not get the amount of lessons that we give them, and they are obliged to get private lessons as well. They have nominally orchestral practice once a week, but they have no teaching in wind instruments, nor even contra-bass.

112. You had a grant of £500 from Parliament last year?—Yes, for the first time.

113. I suppose the effect of that has not yet been much felt?—The effect of it has been that we are within our means now.

114. You appear to have a balance of £200?—Yes, on the last year's expenditure.

115. I see there is a balance in hand from the previous year?—No; it generally averaged that the amount was £500 short.

116. For how long was that?—For many years that was the case. When there were boarders, sometimes the yearly deficit was £1,200.

117. Was your application to Parliament for an annual subvention?—Yes.

118. Is there any reason to think it will be repeated?—It stands in the estimates for the present year.

119. Would you like the amount increased?—Oh, certainly.

120. Do you think you could show good cause why it should be increased?—Yes; it would enable us to assist pupils who have no means at their command.

121. Is not the present contribution of £33 a-year more than the friends of many of the pupils are able to pay with convenience?—Yes. There are some pupils from the country; and though they get an excellent musical education for the sum they pay, they are at the

additional expense of their living in London. No pupil, under such circumstances, can remain at the Academy under an expense of £80 to £100 per annum.

122. If the House of Commons were willing to increase the grant so as to enable the Academy to establish free scholarships, should you think that a proper mode of assisting the Academy?—Yes; I should certainly.

123. And you see no objection to open competition for the scholarships?—None whatever.

124. Or any objection to the competition being spread widely over the whole country?—Not the least.

125. So that each locality might have an interest in sharing in a state subsidy of that character?—That is a large question, which I am scarcely prepared to answer at present.

126. Have you any mode of competitive examination at present?—Yes; for the scholarships.

127. Are they much sought after at the present time?—Oh, yes; for the scholarships vacant last Christmas, consisting of one male and one female, I think twenty ladies competed for the latter.

128. They have to provide for their living; but they get their education free?—Yes.

129. The competition takes place in London?—Yes.

130. What proportion of the pupils are candidates for these scholarships?—I should think about half-and-half. Generally speaking the pupils of the Academy know pretty well the tether or capabilities of their fellow students.

131. Are the pupils of the Academy ever beaten in the competitions by those outside it?—Yes; sometimes it is so.

132. Would it be fair to ask you what improvements you would suggest in the Royal Academy besides that of increased funds?—The reducing of the contributions of the pupils would be a great advantage.

133. Does not the present amount of the contribution required from the pupils in your opinion prevent their remaining at the Academy for so long a period as is required to complete their musical education?—Yes; certainly. That is one of our greatest difficulties; the pupils leave too soon.

134. Do you ever take a fee which covers a course of instruction for a long period?—No; only the fee for the term.

135. Should you feel that you exposed the Institution to any great risk by guaranteeing a course of instruction over two or three years, and taking a reduced fee to induce persons to enter for that period?—It is impossible to say. One pupil will do more in twelve months than another will in three years. I do not think a pupil ought to remain less than three years.

136. Would it not, in your opinion, be good policy to take a lower proportional fee for three years than the fee for each single term?—The fee barely covers the musical education now.

137. Supposing the House of Commons took a more liberal view than at present is the case in advancing musical education, would you see any objection to the increased subsidy taking the form of scholarship, open to the United Kingdom?—No; I should be very glad of it.

138. Government paying the fees?—Certainly. By degrees you may get everybody in.

139. You see no objection to the Government paying the fees for three years in advance?—None.

140. You would get a higher class of pupils in respect of talent, then?—Yes; probably so. We should turn out better pupils. I have alluded to the competitive examinations when the Academy first opened. Almost all the pupils who went in then turned out well because there was a choice, but since then we have been obliged to take in almost anybody.

141. You consider the pupils have not been of the same mark as formerly?—Perhaps not, on the average.

142. Because you have not been able to offer them such low terms?—We were not able to pick and choose.

143. Are you aware that the state does contribute towards musical education by requiring training schools to teach music?—Yes.

144. Have you ever had any pupils in the Academy from the training schools?—No; I do not think we have.

145. I will now call your attention to question No. 5, issued by the committee, which is as follows:—"Is any union between the Royal Academy and similar schools, cathedral choirs, or local institutions, desirable or otherwise?" In reference to that question it is necessary, perhaps, that I should read this letter, which has been addressed to the dean and chapters:—

"Royal Academy of Music, 4, Tenterden-street,
Hanover-square, London.

"VERY REVEREND SIR,—I am directed by the Committee of the Royal Academy of Music to forward the enclosed particulars of the institution, and to request the favour of your kind attention to one of the objects proposed by its friends and promoters, the cultivation of ecclesiastical music; and, in order to further their views, I have the honour to inform you that a resolution has been passed offering to the deans and chapters of cathedrals in Great Britain and Ireland the musical education, on reduced terms, of any one of their choristers who, on leaving the choir from loss of voice, may be possessed of musical talent and may wish to follow the profession of music, and more especially that branch of it connected with our church service.

"The necessity for a complete musical education for such persons is manifest; and the Royal Academy of Music having now received the assistance of a grant of public money, the committee are desirous of opening the advantages of the institution to every class of musicians, among whom the student of church music has claims of the highest order.

"The usual fees for students are eleven guineas per term; but the committee have determined that a subscription of 20 guineas per annum shall entitle any dean and chapter to have one pupil in the Academy [who must have been a chorister in their cathedral], who shall remain there as a student for at least two years.

"I have the honour to be,

"Very Reverend Sir,

"Your obedient servant,

"J. GIMSON, Secretary."

146. Have you received any answers to that circular?—Yes.

147. Accepting the proposal?—They have not as yet availed themselves of it by sending any person up, but they have expressed their satisfaction at the nature of the offer made to them. There has not been time to receive many replies.

148. Has it ever occurred to the authorities of the Royal Academy that as the Ecclesiastical Commissioners have interested themselves in appropriating the revenues of cathedrals, they might with propriety be asked to carry out the intentions of our ancestors in promoting the study of ecclesiastical music, and do so through the instrumentality of the Royal Academy by applying some funds at their disposal for that purpose?—I am organist of Hanover Church, Regent-street, and soon after I was appointed I induced the committee of the Royal Academy of Music to require the pupils to sing in the choir there. My object in that was, we had gentlemen who came there to sing whose voices were such that they would turn out anything but Marios. I thought they would get a knowledge of and cultivate music, so as to be capable of taking a position in a cathedral choir. Then our treble sopranos were ladies. Strangely enough the gentlemen never took the same interest in that study, while my best lady-singers soon got engagements at the different churches. It is not a new thought as to the cultivation and study of ecclesiastical music.

149. My question went to this—The Royal Academy of Music is suffering from want of funds. The Royal Academy might promote the study of ecclesiastical music for the whole country by its central action. The Ecclesiastical Commissioners have busied themselves with

ecclesiastical revenues for church purposes; might not, therefore, the Royal Academy of Music ask the Commissioners to give some pecuniary assistance in promoting instruction in ecclesiastical music in the different cathedral towns and churches of the country?—Mr. BOWLEY, a member of the committee observed—The Ecclesiastical Commissioners have obtained the funds of cathedral choirs, therefore the question will be strengthened. They took away a portion of the musical funds, and we may now ask them to give some back.

150. Do you consider the state of cathedral music capable of improvement?—Most certainly. It suffers from the same disease as the Royal Academy—want of funds. In most cathedrals there was sufficient money to support the choirs, but it has been used for other purposes. I was myself a chorister-boy, but received no musical education beyond learning the services and anthems.

151. I have in my hand the copy of another circular issued by the Royal Academy of Music, addressed to the various military bandmasters, or rather the colonels of regiments. May I ask you if you have any connection with Kneller Hall?—No; I believe there was some communication with the late Earl of Westmoreland, but his lordship did not approve of Government interference with the Royal Academy of Music.

152. You had not then arrived at obtaining the £500 grant?—No; not in his lordship's lifetime.

153. The Academy has issued the following circular?—Yes.

"Royal Academy of Music, 4, Tenterden-street,
Hanover-square, 17th May, 1865.

"SIR,—The committee of the Royal Academy of Music have desired me to forward you a prospectus of the institution, stating its objects, &c., &c., and to call your attention particularly to the part respecting band-masters.

"Although, since the establishment of the Academy, the professors of this country have been enabled to hold their ground, and compete honourably and successfully with foreign artists generally, yet it is much to be regretted that, as far as regards military bands in England, they are very inferior to those of France, Germany, and Belgium.

"To remedy this by degrees, the committee have resolved to admit persons wishing to become band-masters on certain conditions, in order that by receiving a sound education they may become fully qualified to accept such appointments.

"It would enable them to arrange music suitably for their various bands and performers, and thus be the means of economising the funds appropriated for the band players.

"The committee have much pleasure in stating that three of the best bands in the service of Her Majesty, viz., the Grenadier, Coldstream, and Fusilier Guards, are presided over by gentlemen who received their education in the Royal Academy of Music.

"Subjoined is a copy of a letter in which you will see that His Royal Highness the Duke of Cambridge, Commander-in-Chief, highly approves of the resolution of the committee of the Academy.

"Any further information you might wish for will be readily given on application to Mr. C. Lucas, the Principal, or to me, the Secretary.

"I have the honour to be,

"Sir, your obedient servant,

"J. GIMSON, Secretary.

"Lt.-Colonel T. Addison."

[Copy]

"Horse Guards, March 21st, 1865.

"SIR,—I am desired by the Duke of Cambridge to acknowledge the receipt of your letter, and the enclosed resolution, which has given his Royal Highness great satisfaction. His Royal Highness considers that the directors of the Royal Academy of Music have conferred a great boon on the performers of wind instruments who

may intend to fill the position of masters in military bands, and which entirely meets with his Royal Highness's approval.

"I have the honour to be

"Your most obedient servant,

(Signed)

"J. MACDONALD.

"Right Hon. Sir G. Clerk, Bart."

154. I understand you to say that the Academy has no connection with the training schools for singing throughout the country?—No, it has not.

155. Have you any library at the Academy?—Yes; but on a very small scale indeed.

156. How many volumes may you have?—We have several volumes of scores of operas and symphonies.

157. I believe there is no great number of works on musical science?—We have very few.

158. Has the Academy any relations with the various musical societies existing in London and elsewhere?—Only in this respect, that the orchestras of the Royal Italian Opera and at Exeter Hall are made up one-fourth perhaps of pupils of the Academy.

159. There are no official relations between you?—No.

160. Do you not think something might be done in the way of promoting the advance of your students by enabling them to be present at the performances of the various musical institutions of the metropolis?—We subscribe to the Philharmonic concerts, and have certain admissions to them.

161. Probably, if the funds permitted, you would subscribe to others with the same view?—Yes.

162. You think advantage would be derived from it?—Certainly.

163. Have you any collection or museum of musical instruments at the Academy?—None whatever, and I am not aware of the existence of any such museum in the county. The best of the kind I know of is that at Edinburgh.

164. That is under Professor Donaldson, I believe?—Yes; we have nothing of the kind. It would be highly valuable and interesting to have a collection of all the musical instruments ever heard or read of. There is an instrument we read of in Milton, when he speaks of "the jocund rebec's sound." Has any one living ever seen a rebec?

165. You may see a cast of one at South Kensington, brought from Exeter Cathedral.—I consider there ought to be such a collection in London.

166. You have of course heard of payment by results, as connected with primary education?—Yes.

167. Should you think it advisable to pay by results in musical education? as thus, supposing Parliament decided to give more money to the Academy, that the payment should be conditional on your proving your worthiness to receive it, by the proficiency of your pupils every year?—I think I do not see much objection to that, not to take it universally. In some years we turn out a larger number of good musicians than in others.

168. Do you think it would be acceptable to the Royal Academy that the amount of the Parliamentary grant should be dependent, in some way to be hereafter determined upon, on the successful results of the teaching?—Yes; I have no objection to that myself. If Parliament would interfere with us so much the better.

169. You would not object to a system of inspection?—Not at all.

170. Inspection and examination?—Not at all.

171. You would rather court it than otherwise?—Yes.

172. Do you make any use of the musical library of the British Museum?—We cannot take anything out of it. Some of the students go there to see any work they wish to consult. I have been there myself while Mr. Oliphant was the manager. It is not very available for our students.

173. Of what does a musical library consist, or of what ought it to consist?—For our purposes we want scores and parts of operas, symphonies, &c.

[The Committee adjourned.]

APPENDIX A.

INCOME AND EXPENDITURE OF THE ROYAL ACADEMY OF MUSIC, IN THE YEAR 1864.

<i>Receipts.</i>		£	s.	d.
Annual subscriptions	263	7	0	
Donations	163	6	6	
Pupils' contributions—38 females; 21 males	1,768	8	9	
Dividends on 3 per cent. consols (£1,700) ..	71	9	3	
Government grant	500	0	0	
		£2,766	11	6
Balance brought down	207	13	0	
<i>Expenditure.</i>		£	s.	d.
Salaries, viz.:—Secretary	£158	8	0	
Governess	80	0	0	
Librarian	60	0	0	
Hall Porter ..	45	0	0	
Under Porter and Wife ..	70	15	6	414 3 6
Rent and taxes	294	12	0	
Tuition	1,601	4	8	
Repairs.....	33	8	11	
Miscellaneous expenses, including coals, gas, advertisements, postage, stationery, and tradesmen's bills	215	9	5	
		£2,558	18	6
Balance of receipts	207	13	0	
		£2,766	11	6

APPENDIX B.

PROSPECTUS OF ROYAL ACADEMY OF MUSIC.

The institution known as the Royal Academy of Music is the first successful attempt to establish a national school of music in England. That founded under the same name in 1720 did not pretend to be educational; the object then proposed being only the introduction and support of the Italian Opera, and it ceased as an institution in a few years.

Various other proposals appeared from time to time, but none came to maturity excepting this, which was founded under Royal and distinguished patronage in 1822, incorporated by Royal Charter in 1830, and recognised, as well as the Royal Academy of Painting, as a national institution for the cultivation of the fine arts, by a Parliamentary grant in furtherance of its objects.

Being thus established on a permanent basis, and having during the past forty-two years successfully shown, by the number of talented professors whom it has sent forth into the world, that the objects for which it was founded are being realised, and that a large amount of good to the art generally has been accomplished, as well as that the individual interests of the members of the musical profession have been materially improved, it is hoped that the Royal Academy of Music will receive liberal support from all who wish to promote, or are in any way interested in, the progress of music in this country.

From its commencement to the present time it has educated upwards of 1,300 students, 118 of these gratuitously, and 315 on terms reduced to meet the circumstances of those pupils who showed more than ordinary talent. Among those whom it has educated are some of the most distinguished composers, singers, and instrumental performers of the day; many of them having achieved an European reputation.

In order to continue these advantages to the art of music in this country, and if possible to enlarge the sphere of gratuitous instruction, the committee of management earnestly call on all the friends of the Institution, the professors of the different branches of the art, and the musical public generally, to come forward

with that liberal assistance which is indispensably necessary to enable them to carry out their future plans.

The Royal Academy of Music is under the especial Patronage of Her Majesty the Queen, their Royal Highnesses the Prince and Princess of Wales, and His Majesty the King of the Belgians.

The governing body is composed of a President, four Vice-Presidents, and a Board of Directors, from whom are elected a Committee of Management, who, with the Principal, superintend and regulate all the internal economy of the Institution.

The English and foreign professors employed are amongst the most eminent that can be met with in the various departments of instruction.

A resident matron presides over the young ladies' department.

The year is divided into three terms of thirteen weeks each, and the payment by each student is at present eleven guineas per term, with an entrance fee of five guineas. It is, however, proposed to form a junior department for less advanced pupils, who will be admitted into the senior department when fitted for it. The terms of payment for the junior department will be seven guineas per term, with an entrance fee of three guineas; and on their admission into the senior department, the additional two guineas completing the entrance fee is to be paid. Candidates for the junior department must have attained the age of ten years.

The funds for supporting the institution are raised by donations and subscriptions (her Majesty the Queen being an annual subscriber of 100 guineas), an annual Parliamentary grant, and the fees paid by the students.

All candidates for admission must previously pass an examination before the principal and professors appointed for that purpose, to show that they possess musical talent capable of cultivation; and to avoid unnecessary expense and inconvenience to candidates residing in the country, they may be primarily examined by any corresponding member, one at least of whom (a former student of the Royal Academy of Music) will be found in every principal town in the kingdom, and to whom a fee of five shillings will be paid by each candidate; or, in the event of such candidate being a chorister in a cathedral choir, a certificate from the organist will be accepted instead of such primary examination by a corresponding member.

There are two King's scholarships, a Westmorland scholarship, and a Potter exhibition attached to the Institution.

Gratuitous instruction in harmony and musical composition is given to such performers on wind instruments as may occupy, or may wish to occupy, the position of masters of military bands, in order that such persons may more efficiently qualify themselves for their duties therein.

All applications for admission to be made to the Secretary, at the Royal Academy of Music, Tenterden-street, Hanover-square, London, W.

Regulations.

1. All orders whatever for the government and regulation of the Academy emanate from the committee, whose orders are delivered, through their chairman, to the different officers of the establishment.

2. All branches of music are taught in the Academy. Should the particular branch for which the students enter be harmony, singing, harp, or pianoforte, the male students will be required to learn, in addition, any orchestral instrument the committee may require.

3. There are three terms in the year, Lent, Easter, and Michaelmas; with a vacation of four weeks at Christmas, a week at Easter, and a long vacation of eight weeks in summer. The payments are to be made in advance.

Student's Payments—Senior department, 33 guineas per annum, or 11 guineas a term.

Entrance fee, 5 guineas.

Junior department, 21 guineas per annum, or 7 guineas a term.

Entrance fee, 3 guineas.

One term's written notice must be given when a pupil is to be withdrawn, or a term's extra payment will be required.

4. Students will be admitted at the commencement of each term. Candidates for admission must attend for examination by the board of examiners on some day in the previous week to be duly advertised, and with a recommendation from a subscriber, honorary member, member, or an associate.

5. The students will be required to pay implicit obedience to all persons placed in authority over them, and to attend punctually the hours appointed for their instruction, and at all orchestral practices, rehearsals, and performances; they are also required to be present during the entire time of attendance of their various classes.

6. All students will be especially required to attend the orchestral and sight singing practices on Tuesdays and Fridays.

7. All students will be required to learn harmony and the pianoforte.

8. Advanced students will be required to give instruction in the Academy.

9. No student will be allowed to undertake any public or private engagement, without first obtaining the sanction in writing of the committee recommended by the principal, and signed by him and also the chairman, and dated when granted.

10. No student shall publish any composition without the sanction of the committee; and a copy of all compositions so published must be presented to the library of the Academy.

11. On leaving the Academy, the students admitted under the above regulations must undergo an examination. Should the examination prove satisfactory, they will receive a diploma, and, in special cases, the additional distinction of being appointed an Associate of the Institution.

12. Any infringement or violation of the regulations, or any discreditable or improper conduct, will subject the student, at the discretion of the committee, to be dismissed from the Institution; or an associate, to the erasure of his or her name from the register.

The above regulations are appointed by the committee and directors, acting under the charter given by his late Most Gracious Majesty, King George IV.

Signed, GEORGE CLERK,
Chairman of the Committee of Management.

APPENDIX C.

ARRANGEMENTS OF CLASSES AND THE PROFESSORS' ATTENDANCE FOR EASTER TERM, 1865.

MONDAY AND THURSDAY.

GOVERNMENT ROOM.

Signor Arditì.—Singing Class, 10 to 12.—Brougham, Cooper, Willis, Wynne.

Mr. Lucas.—Harmony, 2 to 3.—Buer, Cronin, Harriott, Williams.

CONCERT ROOM.

Mr. W. Macfarren.—Pianoforte, 9 to 10.—Bambridge (1 lesson), Kemp; 10 to 11:30—Buer, Harriott, Williams; 11:30 to 1—Eales, Tylee, McDonald.

Herr Pauer.—Pianoforte, 1 to 2—Henry.

Mr. Holmes.—Pianoforte, 2 to 4—Chatterton, Merriman, Vaughan, Vokins.

K. ROOM.

Signor Garcia.—Singing, 10 to 11—McCandlish, Horton.

Mrs. Netherclift.—Singing, 1 to 2—Buer, Harriott, Williams; 2 to 4—Kinkel, Piedra, S. Pitt, M. Pitt, Whyte.

I. ROOM.

Miss Whyte.—Singing, 10 to 11—Eales, Tylee, Townsend; 11 to 12—Henry, Lazarus, Odell; 12 to 2—Chatterton, Merriman, Vokins, Vaughan, Sharpe.

Mr. H. Thomas.—Pianoforte, 2 to 4—Brougham, Cooper, Wynne, Watts, Willis, Horton, Townsend.

J. ROOM.

Miss Zimmermann.—Pianoforte, 10 to 11:30—S. Pitt, M. Pitt, McCandlish.

Mr. Lunn.—Harmony, 12 to 2—Brougham, Cooper, Wynne, Sharpe, Vaughan, Whyte.

Mr. Westlake.—Pianoforte, 2 to 4—Lazarus, Odell, Sharpe, Whyte.

COMMITTEE ROOM.

Herr Goldschmidt.—Pianoforte, 12 to 3—Hall, Jarratt, Thouless, Kinkel, Kingdon, Piedra.

B. ROOM.

Mr. W. Wells.—Singing, 11:30 to 12—Bell.

Mr. Holms.—Pianoforte, 12:30 to 2—Bell, Johnson, Heywood.

C. ROOM.

Mr. Westlake.—Pianoforte, 1 to 2—Ralph, Rich.

TUESDAY AND FRIDAY.

CONCERT ROOM.

Sight Singing Class for all the Students, 1 to 2; Orchestral and Choral Practice, 2 to 4, for all the students, under the superintendence of Mr. Lucas.

Mr. Lacy.—Elocution, 10 to 1—Haines, Isaacs, McCandlish, McDonald, M. Pitt, Willis, Wynne, Bauermeister, Bradshaw, Brougham, Chadwick, Cooper, Forsyth, Greenaway.

Gentlemen's Class.—Wells, D. Smith.

K. ROOM.

Signor Maggioni.—Italian Language, 10 to 12—Bauermeister, Bradshaw, Brougham, Chadwick, Cooper, Forsyth, Greenaway, Haines, Isaacs, McDonald, Wynne, McCandlish, S. Pitt, Willis.

I. ROOM.

Dr. Steggall.—Harmony, 10 to 12—Chatterton, Eales, Gibbons, Lazarus, Merriman, Odell, S. Pitt, M. Pitt, Severn.

J. ROOM.

Mr. Bannister.—Harmony, 11 to 1—Chatfield, Hendry, Piedra, Tylee, Kemp, Pettitt, Smith.

COMMITTEE ROOM.

Mr. G. Macfarren.—Harmony, 10 to 12:30—Bambridge, Bell, Elliott, J. Jackson, Thouless, Kinkel, Kingdon, Johnson, McDonald.

B. ROOM.

Mr. Goss.—Harmony 12 to 1—Hull, Ralph, Snewing, J. Jackson.

Mr. Horton.—Oboe, 11 to 12—J. Jackson.

C. ROOM.

Mr. Folkes.—Violin, 11 to 1—Elliott, Mountain, Clement, Couldry, Kemp.

Mr. Turner.—Harmony, 9:30 to 10:30—Mountain, Rich, Heywood, Couldry.

A. ROOM.

Signor Maggioni.—Italian Language—Gentlemen's Class, 9:30 to 10—Hamilton, Wells, Smith.

Mr. Aylward.—Violoncello, 12 to 1—Bambridge.

Mr. Lazarus.—Clarinet, 11 to 12—Hallett.

G. ROOM.

Mr. Watson.—Violin, 9 to 11:30—Bell, Dewberry [viola], Heywood, Johnson, Junatt, Pettit [viola], Thouless [viola].

WEDNESDAY AND SATURDAY.

CONCERT ROOM.

Mr. Dorrell.—Pianoforte, 9 to 12—Elliott, Fox, Mountain, Gibbons, Severn, Bryant.

Mr. Cusins.—Pianoforte, 2 to 4:30—Bauermeister, Martin, Dewberry, Jackson, Couldry.

K. ROOM.

Mr. O'Leary.—Pianoforte, 9:30 to 12—Chatfield, Johnson, Isaacs, Forsyth, Chadwick, Wells, Clement.

Mrs. O'Leary.—Singing, 12 to 1:30—Bryant, Martin, Chatfield, Johnson, Severn.

I. ROOM.

Miss Gimson.—Pianoforte, 2 to 3—Greenaway, Bradshaw.

J. ROOM.

Mr. Banister.—Harmony, 12 to 2—Greenaway, Martin, Bradshaw, Bryant.

Mr. Banister.—Wednesday—Bauermeister, Chadwick, Forsyth, Isaacs, Bradshaw.

Mr. Banister.—Saturday—Greenaway, Martin, Bryant.

COMMITTEE ROOM.

Signor Schira.—Singing, 10 to 3—Bauermeister, Greenaway, Haines, McDonald, Chadwick, Forsyth, Isaacs, Bradshaw, Hamilton, C. Harper, H. Harper, Wells, Smith.

B. ROOM.

Dr. Steggall.—Organ, Wednesday, 9 to 12:30—Kingdon, Gibbons, Bambridge, Evers, Fox, Pettit, Thouless.

Mr. Evers.—Pianoforte, 1 to 2:30—Smith, J. Jackson, Pettit.

C. ROOM.

Mr. Mason.—Pianoforte, 11 to 12—Snewing, Hallett.

A. ROOM.

Mr. Sainton.—Violin, 11 to 11:30—Ralph, Snewing, Jackson.

G. ROOM.

Mr. Lucas.—Harmony, 12 to 1—Couldry, Dewberry, Fox, Jackson.

Mr. Radclif.—Saturday, Flute, 2 to 3—Rich.

The tuition given to each student per week is as follows:—

Ladies.—If the principal study be the pianoforte, the student has two lessons of half-hour each on that instrument. Second study—two lessons in singing of twenty minutes each. Harmony—two lessons in classes of four to the hour. All students are obliged to attend the singing class and the orchestral and choral practices twice a week. If the principal study be singing, the student has two lessons of half-hour each. Second study, pianoforte—one lesson of half-hour. Harmony—one lesson in classes of four to the hour. Italian language—two lessons in classes of six to the hour. Sight singing and orchestral and choral practices as above.

Gentlemen.—If the principal study be violin, or any other orchestral instrument, two lessons of half hour each. Second study, pianoforte—two lessons of twenty minutes each. Harmony—two lessons in classes of four to the hour. Sight-singing and orchestral practices. If the principal study be pianoforte, two lessons as above, and second study some orchestral instrument. Harmony as above. Sight-singing and orchestral practices. If the study be singing, the same course is adopted as before mentioned. Although each student only receives individual tuition, as stated above, all the students are required to attend their masters in classes of four and remain during the whole time of each class, consequently they have the advantage of hearing the remarks made to others. Some students, in addition to the above, receive lessons on the organ. All have the use of the music contained in the library of the Academy.

Proceedings of Institutions.

ALTON MECHANICS' INSTITUTION.—The twenty-seventh annual report says:—The committee have reason to believe, that notwithstanding they have to acknowledge a falling off in the number of members, the Institution continues in a healthy working condition. Of quarterly members there are 14 less than last year, and 33 less than the year before. There has been an addition made to

the library of 48 volumes, bringing the total number up to 1,671, and besides these, 19 new volumes have been purchased to replace old ones which have been entirely worn out in the service. The issues of books for the year have been 2,559, or on an average about 49 per week. The lectures were 15 in number, and amongst them may be mentioned:—One on “Mahommed, his Words and Works,” by W. Dowling, Esq., of the Inner Temple; one on “The Importance of an Acquaintance with Elementary Science,” by J. C. Buckmaster, Esq., from the Science and Art Department; two on “Milton, his early Life, Times, and Poetry,” by the Rev. J. T. Plummer; one on “Fishes, Fossil, and Recent,” by Waterhouse Hawkins, Esq.; one on “The Life Boat, and her Works of Mercy,” by the Rev. N. H. McGachen; one on “The Romance of the Bourbon Family,” by Dr. J. C. Daniel; and one on “Adam Bede,” by G. Grossmith, Esq. The number of subscribers amounts to 226, viz.:—Annual subscribers of 10s., 45; ditto of 1 guinea, 52; quarterly subscribers, 106; ditto who have paid part of the year and have left, 30. The statement of accounts shows that the expenditure has amounted to £155 0s. 5d., and that there is a balance due to the secretary of £13 15s. 5d.

PEMBROKE-DOOK MECHANICS' INSTITUTE.—The fourteenth annual report says that in the condition of the Institute there is a steady improvement. The total number of members was 285, showing an increase of 13 during the twelve months. The library for circulation consisted of 2,090 volumes—101 of which had been added during the year. Upwards of 60 members have, since 1862, kindly volunteered an annual subscription of two shillings, in addition to their regular subscription, amounting to £16 2s. 6d., to be devoted entirely to the building fund. In reference to the annual examination by the Society of Arts, the Committee feel much pleasure in testifying to the increasing interest taken by the members in these educational tests; and, if an educational scheme, in connection with the Institute, were properly developed, a still further increase in the number of candidates would ensue. The balance sheet shows that the income was £118 5s. 6½d., and that there was a balance in hand of £9 13s. 1d.

REDDITCH LITERARY AND SCIENTIFIC INSTITUTE.—In the last report the abstract of accounts shows a balance due to the treasurer; but the money has been expended specially in the library department, for requirements not likely to occur again. The lectures have produced a profit, instead of a heavy loss, as in the previous year's account. The library has been increased, thoroughly re-arranged, and the books repaired, covered, and newly numbered; also new catalogues have been printed. The total number of volumes is now 1,074. The issues this year have been only 1,632, a decrease accounted for by the library having been closed about ten weeks, in consequence of the re-arrangement. The Working Men's Branch is progressing most satisfactorily; the newspapers and magazines supplied to that department have been increased. The Saturday evening entertainments have rather increased than diminished in popularity and in prosperity. A very successful effort has been made in a new direction—the establishment of science classes. In the first session 13 pupils (out of 14 candidates) passed a Government examination; and about three times that number have attained such a stage on the road to scientific knowledge as will most probably lead them on to further efforts. The expenditure has amounted to £139 1s. 3d.

EXAMINATION PAPERS 1865.

(Continued from page 562.)

The following are the Examination Papers set in the various subjects at the Society's Final Examinations, held in April, 1865:—

ELECTRICITY AND MAGNETISM.

THREE HOURS ALLOWED.

1. Describe the best construction of a mariner's compass. How are the needles best arranged, and why?
2. How have the diurnal changes in the earth's magnetism been accounted for?
3. Explain experimentally the phenomena of diamagnetism.
4. State the theory of electricity which you consider most in accordance with the present state of knowledge, and mention some experimental illustrations.
5. Distinguish between an electrometer and an electro-scope, and describe the condensing electro-scope.
6. Explain the conditions of efficiency in a lightning conductor.
7. In what respects does the electricity evolved from a machine differ in quality from that of a battery, and how may they be shown to be identical?
8. What is a *so-called* astatic needle, and what position will it assume when the two needles are exactly equal in force?
9. Explain the construction and use of a tangent-galvanometer.
10. Explain the cause of the rotation of a current round a magnet, or *vice versa*.
11. Describe the construction of any magneto-electric telegraph.
12. Explain the construction of a submarine cable, and the method of testing its insulation.
13. How is an induction-coil machine constructed, and by what special apparatus may the shocks be intensified?
14. Explain the process of electroplating.
15. By what means can the current be most economically produced for electro-metallurgy on the large scale?
16. What phenomena result from the transmission of a current through a living compound nerve?
17. What electric phenomena are manifested by portions of nerve and muscle of a recently killed animal?
18. What is the peculiar character of thermo-electric currents, and by what means can they be most readily produced?

LIGHT AND HEAT.

THREE HOURS ALLOWED.

GEOMETRICAL OPTICS.

1. Give the definitions of a beam of light, a ray of light, and a pencil of rays. Trace the visual pencil, or the pencil of rays by which the image is seen, when an eye in a given position sees the image of an object which is formed by a *plane mirror*; showing the form and position of the image from the law of the reflection of light, and stating whether the image which is seen is real or virtual.
2. Show how the image of an object is formed by a *concave* spherical mirror, both when the object is near the mirror and when it is distant. Show that the image of an object formed by a *concave* mirror is sometimes real and sometimes virtual, and show the circumstances in each case. Show how a combination of a *concave* mirror, a *plane* mirror, and an eye-lens constitute the Newtonian telescope, and show how the magnifying power is found.
3. Show how the *refraction* of light at a *convex* spherical surface of a dense refracting medium forms an image of a distant object within the medium. Apply this discussion to explain the formation of an image upon the retina of the eye, supposed in the first instance to be of a homogeneous structure. What discussions have arisen to explain why we see objects erect, when the image formed upon the retina is inverted?
4. Explain what is meant by an *achromatic* lens; and show how the achromatism is produced. State the advantages possessed by achromatic telescopes and microscopes over the simple forms of these instruments.

PHYSICAL OPTICS.

5. Explain what is meant by a beam of *plane polarized* light, and show the various methods by which such beams can be obtained. Explain the modes of testing the polarization. What is the state of the polarization of the two rays, which, originating in a ray of common light, have traversed a double refracting crystal?

6. Explain what is meant by the colours of *thin plates*, and show how the colours of the soap bubble, and of *thin films* of refracting substances generally, are explained on the doctrine of the interference of light. Describe some cases which occur in common experience where such an explanation will apply.

7. Describe the appearances seen when we place a *hair of the head* before the pupil of the eye, and look towards a distant lighted candle; these appearances being more distinct when we look through a pin-hole in a card, or a narrow slit parallel to the hair. Give the explanation of the phenomena which are seen.

8. Show the arrangements which are necessary in the polarizing microscope, and state how the phenomena which are seen in the field of view arise. Give some examples of objects which are proper for the polarizing microscope.

HEAT.

9. Give the distinction between the *temperature* and the *latent heat* of a body. If steam, and the water from which it arises, are of the same temperature, explain what amount of heat (or, better, of caloric as the cause of heat) has been required to change the water into steam. When the steam is condensed into water again, what amount of heat does it give out?

10. Describe the construction and graduation of the *common mercurial thermometer*; and show how to compare the different scales of degrees which have been used. When the temperature is 80° in England, what would it be called in France?

11. State the ordinary law of the *increase of volume* of the gases under constant pressure for increase of temperature. Does the same law apply to super-heated steam when removed from contact of the water from which it is produced; and to the vapours of the liquids generally, in similar circumstances?

12. Explain the *principle* of the construction of the double-acting condensing steam engine; and show how the communicating and abstracting of heat produces the mechanical force which is developed.

CHEMISTRY.

THREE HOURS ALLOWED.

No candidate is allowed to answer more than three questions in each division.

FIRST DIVISION.

1. 100 cubic centimetres of air ($6 \cdot 10271$ cubic inches) are mixed with 50 cubic centimetres of hydrogen at 15° C. What will be the volume of the residual mixture after explosion, at the same temperature and pressure?

2. Describe the construction and working of an apparatus for the preparation of pure and dry hydrogen. Explain by symbols the chemical changes which occur in the process.

3. How is ammonia obtained from crude coal gas? Describe and explain the chief reactions of ammonia.

4. How is marsh-gas obtained in a state of purity? How much heavier is it than hydrogen? How can you distinguish and separate it from olefiant gas?

5. Describe and explain the action of chlorine on a concentrated solution of potassic carbonate, also its action on slaked lime.

6. How would you prepare pure silica from an insoluble silicate such as felspar?

SECOND DIVISION.

1. An alloy of antimony and lead is given. How would you prepare pure metallic antimony from it?

2. A sample of copper is suspected to contain arsenic. How would you proceed in order to decide whether arsenic is contained in it?

3. Describe the action of sulphuretted hydrogen on aqueous solutions of the following compounds separately, viz., antimonious acid, corrosive sublimate, chromic acid, ferric chloride, susquichloride of iron³, supposing that each of the solutions contains free hydrochloric acid. Explain the action in each case by an equation.

4. Explain the manufacture of white lead.

5. How is aluminium prepared? What alloy of aluminium is chiefly made?

6. How is caustic potash usually prepared? What are its chief impurities? How can the alkali be obtained pure?

THIRD DIVISION.

1. How is vinegar usually made? how purified? Describe the compounds of acetic acid and lead, giving their formula.

2. Describe and explain the process of etherification, giving the formula of the substances which take part in it.

3. What decomposition does benzoate of lime undergo when subjected to dry distillation? What is the decomposition when it is distilled with hydrate of lime?

4. How can pure uric acid be obtained from guano?

5. How would you test for cane sugar in the sap of a plant?

6. Describe the formation and properties of some compounds of metals with alcohol radicals, and show in what manner their constitution decides the atomic weights of the metals contained in them.

(To be continued.)

PARIS UNIVERSAL EXHIBITION OF 1867.

The Emperor has just issued the decree approving the decisions of the Imperial Commission relative to this next great exhibition, which is to include Art, Agriculture, and Industry.

It is decided that it shall take place in the Champ de Mars, in a temporary building, surrounded by a park, destined to receive living animals and plants as well as objects too large or unfit for exhibition within the building. The exhibition is to open on the first day of April, and to close on the last day of October, thus extending its duration to seven months. Some of the regulations are of a novel character and deserve notice. In the first place, a committee is to be appointed immediately, to make the exhibition, its objects, and regulations known thoroughly throughout the provinces of the empire; to make out, by the end of October in the present year, a list of the principal artists, agriculturists and manufacturers whose aid will be valuable to the exhibition; to induce preliminary local exhibitions of agricultural products in each department; to form a commission composed of scientific men, agriculturists, manufacturers, foremen and other persons to study these exhibitions and report on the use which may be made of the information thus obtained; to arrange for the collection of funds for aiding the working classes in visiting the exhibition, and for the publication of the reports mentioned above.

It is announced that the official catalogue will be composed of two portions, to be arranged alphabetically, one part in the order of exhibitors names, the other in that of objects, and on this account the materials for the catalogue, foreign as well as French, are to be supplied by the end of the present year.

The classification differs considerably from that of former exhibitions, and is divided into ten groups and ninety-five classes. The first group comprises the fine arts. The second group consists of the materials and applications of the liberal arts:—Printing, stationery, industrial art, photography, music, medical, mathematical, and scientific instruments, maps, geographical and educational apparatus. The third group includes furniture, linen, &c.,

paper hangings, plaster and other ornaments, glass, porcelain, carpets, cutlery, goldsmiths' work, bronze, clocks and watches, apparatus for lighting and heating, perfumery, and small wares. The fourth group comprehends all objects of personal wear and decoration, including tissues, cotton, linen, woollen, and silk shawls, lace, hosiery, jewellery and other ornaments, arms, travelling equipments and toys. The fifth group includes mining and mineralogy, iron and steel wares, forest produce, animals, implements, and produce of the chase and fisheries, and of uncultivated lands, agricultural, chemical, and pharmaceutical productions, materials for, and products of, dyeing and printing, dressed furs and skins. The sixth group is to consist of instruments and processes of ordinary art, metallic, rural, agricultural, alimentary, chemical, &c., motive and other machinery, and tools of all kinds, carriages and carriage making, saddlery, railway and telegraphic plant, instruments and processes, civil engineering and public works, and maritime matters. Group the seventh takes in alimentary substances, fresh or preserved condiments and other stimulants, wine and other drinks. The eighth group includes living products, and the material of agriculture, useful insects, fish, &c. The ninth is devoted to horticultural products and materials of all kinds. The tenth and last group is to consist of objects exhibited with special reference to the material and moral welfare of the great mass of the population, and is to include matters connected with education, habitation, clothing and food, and amongst other things a collection of the costumes of all nations, with special reference to climate, profession, economy, and health, and an exhibition of the tools, processes and products of working men, who carry on their business with the aid only of their own family or of an apprentice, in relation with the objects of this group.

It will be observed that the classification does not comprise military and naval armaments; and, it may be added, that the commissioners express a desire to make any such alterations in their programme generally as may hereafter seem desirable, and, in fact, invite suggestions on that head.

As regards works of art, only those produced since the 1st of January, 1855, are admissible.

All objects are to be exhibited under the name of the producer, but the name of a regular agent may be added by permission of the exhibitor. Merchants and others will, however, be permitted, by special order, to exhibit products not shown by their manufacturers.

Cash prices may be affixed to the articles, and in the case of the economic furniture and clothing class, this is obligatory.

Each exhibitor will have the right to a card of admission to the exhibition, and recognised agents will be placed on the same footing.

The rates of admission, and what medals or other prizes are to be awarded, will be announced hereafter.

A scientific commission, to report, in concert with the juries, on the various classes of the exhibition; the delivery of lectures, for which a theatre is to be provided near at hand; and classes for study, form part of the scheme.

To avoid delay and incompleteness at the time of the opening of the exhibition, the Imperial Commission has adopted a system differing in several respects from those which have hitherto prevailed. These changes will be best indicated by the following extracts from one of the schedules attached to the report:—Notification of the amount of space to be allotted to foreign states is to be given before the fifteenth of next month. The outline plans of each foreign commission to be sent in before the end of October, and all the details before the end of January, 1866. The building and park to be finished by the first of December next year. All the stalls and fittings of exhibitors to be finished by the middle of January, 1867. All goods to be delivered within the exhibition building between the 15th of January and the 10th of March.

Everything to be in its place by the 28th of March; the two following days to be devoted to a thorough cleansing and brushing up of the whole exhibition; and the last day of March to a complete official review of the whole.

It will be perceived that two points which have been already much discussed are left untouched in the report, namely, the proposed arrangement of the exhibition in such a manner as to present both a geographical and a systematic classification; and the entire avoidance of galleries, and consequently of staircases.

Fine Arts.

FINE ART EXHIBITIONS IN THE FRENCH PROVINCES.—The growth of provincial exhibitions of works of art in France is one of the most remarkable facts of the day and shows how the love of the beautiful is spread over the whole country. Almost every week brings the announcement of a new one. Amongst those which have taken place, or are arranged for the current half-year, are those of Alençon, Bordeaux, Marseilles, Lyons, Nantes, Nîmes, Niort, Spa, Toulouse and Versailles. As these provincial exhibitions are held at various seasons—that of Lyons, one of the most important, opens in the latter part of December or the beginning of January—artists are able to send their works to two or three in the same year. To give an idea of the pecuniary effect of these provincial exhibitions with respect to artists, it may be mentioned that during the late exhibition at Bordeaux the purchases reached £2,639 in amount. The authorities of the town expended £256 for two pictures and three bronzes for their museum; the Society of the Friends of Art, by which the exhibition is managed, £880; and private individuals £1,500. Many of the works purchased, which numbered more than a hundred, were by Parisian artists, or artists well known in the Paris world of art, such as Antigna, Barye, Blin, Brown, Mécue, Rousseau, Boulangé, Chaplin, Corot, Fromentin and Landelle; but still more were by artists yet but little known beyond the provinces. To them these provincial exhibitions are of immense service, not only for the sale and exhibition of their own works, but on account of the opportunity they afford of seeing them exhibited side by side with those of artists of acknowledged standing and celebrity.

NEW PROCESS OF PICTURE CLEANING.—The *Pall-mall Gazette* says:—Oil pictures of ancient date become clouded by dust deposit; this can be wiped off. They also are obscured by an opacity in the varnish surface; this can be scraped away, but rarely without serious detriment to the picture. Too many flayed and glaring wrecks of what were once noble efforts of pictorial art exist to warn the artist covetous of immortality; but Professor Pettenkofer's process gives us hope that their numbers need not be increased—that the picture-cleaner's noxious vocation will soon be superseded. Science has disclosed the true means of restoration. The opacity of the varnish arises from a molecular change; the resinous particles of which it is composed becomes displaced in course of time, and when so displaced their transparent quality is lost. These atoms, once restored to their original cohesion, recover lucidity; and this can be effected by exposing the surface of the picture to the fumes of alcohol. The spirit, when absorbed, evaporates; the varnish coating has received new life, and is left as hard as it was before—perhaps harder. The hand of man throughout the operation has never approached the surface of the picture. Professor Pettenkofer has patented this application of alcohol, and the apparatus by which it is effected, but with great liberality he placed it freely at the disposal of the authorities of the National Gallery. After preliminary experiments, it has been tried with complete success, under Mr. Wornum's personal superintendence, on sixteen of the pictures in the public collection. "With such results," our authorities consider it "but just to the liberal and

scientific inventor to express a favourable opinion as to the utility of the process;" though they have no better means of advertising their opinion of its merits than an unread appendix to this year's estimates.

Manufactures.

CHINA GRASS.—The regular introduction of this fibre into manufacture is being steadily pursued in France. In the *Journal* of the last week of 1864, page 110, will be found an account of the experiments recorded up to that time. The subject has now been pushed some steps further, and the new results, although apparently highly satisfactory, exhibit modifications of former statements well deserving the attention of the manufacturing world. M. Ch. Legheer, cotton spinner, of Laval, has produced eight pieces of coutil, white and dyed of various colours, for trousers, which are pronounced excellent, the stuff being peculiarly silky, and the colours fresh and pure. These tissues are composed of mixtures of jumel cotton and China grass in the proportions of 50 per cent. of the latter fibre in the warp, and 60 per cent. in the weft. M. Legheer has recorded the results which he has obtained in a letter, of which the following extract contains the principal points. He declares that there is scarcely any waste whatever in the working of the China grass; that it works perfectly with the ordinary cotton spinning machinery; that it may be advantageously used as a substitute for cotton to the extent of from 60 per cent. to 75 per cent., and that the beauty and regularity of the tissue are most remarkable. The weaver who produced the specimens alluded to has offered to take all the China grass yarn that M. Legheer can produce for the next six months, to the extent of a ton a day, and M. Legheer, on his part, expresses his readiness to take a very large quantity, and to devote himself entirely to the spinning of it. As regards the cottonization, to use the expression of the writer, it is performed perfectly well by the ordinary carding machinery (*batteurs-cardeurs*), at the rate of from three to four hundred pounds per day. Moreover, M. Legheer says that when he can secure a good supply of the China grass he is convinced he can spin it without any mixture of cotton whatever, and produce yarns which will leave nothing to be desired. He does not, however, regard the fibre as a complete substitute for cotton, but believes it might advantageously replace the latter to the extent of from 60 to 75 per cent. Now comes the great question of cost and economy. The following are the results made known to the public. The expenses of working, dyeing, and bleaching cotton grass cloth, are said to be the same as for the same kind of fabrics composed of flax or cotton. As regards the material itself, it is said that while a tissue of pure cotton costs about 6*fr.* 07½ per kilogramme, one composed of half cotton and half China grass comes to 4*fr.* 72½, and a tissue composed of the latter fibre alone would only cost 3*fr.* 25 per kil. It is here observed, however, that the China grass at present employed is heavier than the cotton, but Messieurs Mallard and Bonneau, who supplied M. Legheer with the material, state that by carrying the operation of preparing the fibre a little further, they can produce it of the same lightness as cotton. But the question naturally arises whether such improvement in the preparation will not seriously alter the figures of the above estimate. The Chamber of Commerce of Rouen has pronounced most favourably on the fabrics composed of the mixed fibres, and all the world is acquainted with the fine tissues which have been produced, but nothing but practical experience on a large scale will settle the economic problem. M. Legheer's confident assertion respecting the absence, or almost entire absence, of any waste in working the China grass, is certainly a point of great importance, and is estimated as giving it an advantage, under this head, ranging

in value from 10 to 25 per cent., as compared with cotton of different kinds. M. Paul Dalloz, in commenting on these reports in the *Moniteur*, says, with reference to the absence of waste:—"And we had already counted on this waste for the manufacture of paper! Will China grass rob us of this hope? If so we beg Messieurs Mallard and Bonneau to try their methods of preparation on some other plant, the commonest in our fields, furze for instance, and furnish our paper mills with the raw material, which shall deliver us from the paper loaded with duty, with which the printing office has been so long afflicted." M. Dalloz's appeal will produce a crop of sympathy in all the printing offices in the world, and perhaps eventually the gentlemen he appeals to, or some one else may supply the desired raw material, but it is not found yet. However, every little helps, and possibly repeated demands may have some effect. The Senate recently received a petition on the subject from seventy-nine paper makers, which was reported upon by M. Le Roy de Saint Arnaud, and referred to the Minister of Agriculture and Commerce. Promising as are the reports concerning the utility of China grass, not only for light gauzy articles, but for the production of solid tissues for ordinary wear, the grand problem of a good supply of the raw material remains, unfortunately, at present unsolved. Possibly the necessary supply may be obtained from India and China, in which case there is nothing more to be said, except indeed it can be produced nearer home more, or even as economically. Algeria offers one of the best chances of a supply of the fibre, and the Emperor paid considerable attention to the subject during his recent visit to his African dominions; and it is said that experiments made near Paris prove that the plant could be easily acclimatized in France. With the view of testing the questions both of production and manufacture, a society, composed of some of the most influential persons in the cotton trade, and in connection with a banking firm of high standing, has, it is said, been formed, which will supply capital to agriculturists for the special purpose in view, and also establish a factory near Rouen for the preparation of the fibre. There is no doubt that the matter is one of great importance, and it will be of great service to commerce and manufactures if the efforts of the company should be crowned with success.

EXHIBITION OF INDUSTRIAL ART.—The preparations for the Exhibition of Industrial Art, which is to open on the 10th of August this year in the Palais de l'Industrie in the Champs Elysées, under the management of the "Union Centrale des Beaux Arts appliqués à l'Industrie," whose establishment in the Place Royale has been noticed in the *Journal*, promise good results. The applications for space are very numerous, and there is no doubt that it will be by far the best exhibition of its kind that has been held in Paris. As already stated, it will include not only contemporary but retrospective art, and the contributions of collectors towards the latter promise to render it highly interesting. The plan adopted is to confine the works of the present day to the ground floor, and those of the past to the galleries. With the view of rendering the connection between the two floors more easy, a grand staircase is now in course of construction which will give direct access to the galleries from the centre of the nave, and thus, as it were, invite the public upstairs, and save visitors a search for the staircases, which at present are hidden in the angles of the building. This matter was well worth the attention of the managers, who have therein shown an enlightened regard to the value of easy and evident modes of ascent and descent. The Palais de l'Industrie is unfortunately constructed; the galleries are very wide in proportion to the building, and consequently a very large portion of the lower floor is ill-lighted. The new exhibition building, to be used in 1867, is to be entirely without galleries, and there is no doubt that the convenience and general aspect of the exhibition will be immensely improved by their absence.

Colonies.

The following is a summary of the latest Australian intelligence, as given in the Messrs. Silver and Co.'s Emigration Circular, just published:—

VICTORIA.—Population on 31st March, 610,250, showing increase of 5,192 on first quarter of the year. Land occupied on 31st March, 6,064,963 acres, first selection made under the new Act. Colonial defence, water supply, and mining bills before Parliament. Establishment of a branch of the Royal Mint proposed. Abundant rain causes active operations on gold fields and agricultural lands. A 70 oz. gold nugget found at Bendigo. An explosive compound—said to have advantages over gunpowder—patented. Slate, fit for roofing purposes, discovered at Castlemaine. Competent female servants much in request.—May, 1865.

NEW SOUTH WALES.—Seasonable rains for agricultural operations, causing abundance of pasture, and favourable reports from most of the country districts. £40,000 voted for emigration, and £2,500 for sinking wells on the Darling and Lachlen. Another oil-yielding mineral discovered at New Hartley.—May, 1865.

SOUTH AUSTRALIA.—Colony in highly prosperous state. Revenue for quarter ending 31st March, £213,848; very large surplus in land. The question of making Adelaide a free port under consideration. Excess of immigration, over emigration, since commencement of the year, 1,341, but immigrants still very much wanted; large votes being passed and Government desirous of having two ship-loads per month. Copious rains making farmers very busy. Several new hundreds declared, and surveying rapidly progressing. New road bill prepared. Railways on lease submitted for tenders. The central part of colony to be called Alexandria Land.—May, 1865.

QUEENSLAND.—Mail service *via* Torres Straits asked for. Large cotton yield expected; picking commenced. Restrictions on importation of stock about to be removed.—May, 1865.

NEW ZEALAND.—Wanganui campaign closed. Wellington exports for quarter ending March 31st, £111,702; imports, £58,029. Trade improving, many buildings in course of erection, and general prospects have a promising aspect in Wellington. Land for sale in the northern provinces, being surveyed. Okitiki digging yielding largely; new mines discovered. Railway proposed from Picton to Blenheim.—May, 1865.

SALMON IN TASMANIA.—It has been stated that although 2,000 of the ova placed in the ponds in the River Plenty were successfully hatched into living fish, they have since been reduced to below 500, owing to mortality and the destruction by water rats, so that the great salmon acclimatization experiment is not now so cheering as it was once considered.

Notes.

FISHING BY THE ELECTRIC LIGHT.—The *Courrier de Bretagne*, a paper published at Lorient, gives an account of an experiment made recently at Belle-Isle to fish at night by means of electric light. The light was produced by a powerful electro-magnetic machine, constructed by M. Bazin, the well-known engineer. The experiment, which was conducted by M. Bazin on board the *Andalouse*, in the presence of 1,500 persons assembled on the pier, was completely successful, and the quantity of fish taken very large. As soon as the submarine lantern was immersed, shoals of fish of every kind came to sport in the illuminated circle, while the fishermen outside it spread their nets from their boats. The light illuminating the deep sea, the fish arriving in shoals, attracted by the fictitious sun, the boats at the edge of the lighted circle,

the deep silence, interrupted only by the working of the electro-magnetic machine, is described as an imposing sight. It is said that M. Bazin is shortly to proceed to Bona, in Algeria, to establish a coral fishery by the assistance of his electric light. He proposes in the meantime to descend 400 feet into the sea and explore with his submarine instruments. The Minister of Marine has given orders for a ship of war to be placed at his disposal, and Admiral Choppart has appointed a commission, composed of engineers and naval officers, to attend M. Bazin's experiments officially.

FATAL EFFECTS OF LIGHTNING IN FRANCE.—M. Boudin has recently presented a report to the Paris Academy of Sciences, on the accidents caused by the electric fluid. It appears that during the years from 1835 to 1863 inclusive, 2,233 persons were killed instantaneously. In many instances where the lightning struck mixed groups of persons, it was observed the males suffered far more than the females. M. Boudin contradicts the assertion, which has been made and repeated with much confidence, that the beech tree is never struck by lightning, and declares on the contrary that many instances have been recorded of such accidents. Of thirty-four persons killed in the fields by lightning, in the year 1853, fifteen were struck when sheltered beneath trees; while, during the years 1841 to 1853, out of a hundred and seven killed in the fields, only twenty one were reported to have been near trees. Some of the cases which have occurred this year in Paris were very terrible. Two men were passing along the Rue du Rocher in a covered cart, such as is used to convey linen to and from the wash; the lightning struck the vehicle, killed one of the men and the horse on the spot, melted some of the iron work of the cart, but left the other man completely uninjured.

A MATHEMATICAL CARICATURIST.—M. Gavarni, the celebrated artist, whose clever illustrations are known almost as well in London, where he resided for some time, as in France, has just presented to the Academy of Sciences of Paris a treatise on mathematics.

Correspondence.

TRADE MARKS.—SIR,—When, some time since, I had the honour of addressing you on the subject of trade marks, the statute affecting them had not been enacted, and it was then not too late to entertain hopes that some provision might have been introduced into it for a system of trade-mark registration. The Act, however, has been passed without any such provision, and I anticipate that, before long, practical difficulties will arise in its application and working, and considerable litigation will ensue. Already persons appear dissatisfied with a protection which is weak, from what I may call essential defects. It is true that the extraordinary and unnecessary severity of the penalties which the Act imposes—a severity more in accordance with French than with British jurisprudence—renders the operation of the law almost nugatory. But, were this otherwise, there would still remain serious difficulties in the way of its operation, and grave drawbacks to its success. It seems difficult to believe that there is actually no register of reference which persons might consult to ascertain whether they are transgressing or not. A man may be at a considerable expense in having dies of particular trade marks made, and goods marked with them, and may afterwards learn the agreeable fact that the same marks, or something very like them, had already been appropriated by other persons. Machinery for registration already exists at the Design Office, and arrangements might be made there for recording trade marks without much (if any) increase of the present staff. Again, according to the very large, or liberal, words of the Act, a dot or line might be a trade mark; there is no real definition of what is to constitute a substantial or distinctive trade mark. It would assuredly have been

wiser had the statute contained some sort of general definition of the essentials of a trade mark, or at least some provision for such eventual definition, by administrative or ministerial rather than judicial decision, in case of need. Indeed, such decision might have been safely left (even without ready appeal) to the judgment of an intelligent and discreet registrar, seeing that, in few cases, would intrinsic rights have been prejudiced even by an adverse decision, the case differing from that of copyright in design. The manufacturing and commercial classes generally—with the exception, perhaps, of Birmingham manufacturers—do not appear to take great interest in the Act as yet. A member of your Society, Mr. Edmund Johnson, certainly endeavoured to call their attention to its provisions. If the question be thoroughly ventilated and considered, I believe the new Parliament would be urged to introduce certain modifications in this statute, in the directions which I have ventured to indicate, viz., by establishing a system of centralised registration, by defining, or appointing officers to define, the essentials or composition of a substantial trade mark; and by rendering the penalties more consonant with English notions, and sufficiently appropriate to the offence, to induce their infiction in ordinary course.—I am, &c., M. HENRY.

Fleet-street, July, 1865.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Par.

Num.

Delivered on 4th July, 1865.

324. East India Sanitary Commission, &c.—Letter.
393 (1). Referees on Private Bills—Index to Report.
406. Fire Insurances—Account.
River Plate, &c.—Correspondence respecting Hostilities (Part III.).
Manufactures, Commerce, &c. (No 10)—Reports by Her Majesty's Secretaries of Embassy and Legation.

Delivered on 5th July, 1865.

- 319 (1). Prison Ministers' Act—Further Return.
373. Rangoon and Western China—Memorandum by Captain Williams.
382. Charities—Return.
400. Shannon River—Report and Evidence.
431. Dublin Corporation Waterworks—Return.
North America, No. 9 (1865)—Further Correspondence respecting the Cessation of the Civil War.

Delivered on 6th July, 1865.

370. Master and Servant—Report from the Select Committee.
428. Kitchen and Refreshment Rooms (House of Commons)—Report from the Select Committee.
Zollverein—Treaty of Commerce.

Patents.

From Commissioners of Patents Journal, July 14th.

GRANTS OF PROVISIONAL PROTECTION.

- Boats and vessels, fittings for—1731—J. Cox.
Bobbin net or twist lace, production of—1757—S. Bates.
Bricks—1699—T. L. Jowett.
Carriages—1787—J. Harrington.
Carriages, drags for—1680—A. E. Dobbs.
Carriages, locomotive engines and railway—1646—G. Smith.
Carriage windows, railway and other—1718—J. K. Farnworth.
Castors—1689—R. Eastman.
Chair ladder—1232—J. B. Lavanchy.
Cheeses, table for dressing of—1722—W. Percival.
Chisels, &c., heating—1715—W. Brooks.
Circular endless railway—1771—W. E. Gedge.
Clay tobacco pipes—1683—L. White.
Coin, reception of—1675—J. M. Abrams.
Collars and cuffs—1741—R. A. Brooman.
Cotton gins—1714—J. H. Johnson.
Croquet mallets—1704—S. S. Bateson.
Dresses, linings for ladies—1763—P. Passavant.
Eggs, desiccating—1632—C. A. Lamont.
Feeding bottle, food or fluid regulator for—1727—W. Botham.
Fire-arms, breech-loading—642—F. Tolhausen.
Furnaces—1620—R. A. Brooman.
Furnace bars and fire grates—1672—S. Godfrey.
Furnaces, self-acting apparatus for distributing feeding materials in high—1733—A. Prince.
Gas retorts—1737—W. Schofield.
Gas, supplying to burners—1687—H. S. Snell and F. E. Thomas.
Gunpowder—1679—J. Gale.
Hats, &c.—1707—W. E. Newton.
Hay, straw, &c., apparatus for cutting—1712—J. Spratt.

- Hydro-carbons, apparatus for burning liquid—1711—R. A. Brooman.
Knitting machines—1747—G. Davies.
Lace, folding and carding—1238—T. W. Roe.
Life-boats—1688—H. A. Bonneville.
Liquids, measuring—1674—E. K. Dutton.
Locks—1735—W. E. Newton.
Locomotive engines and in springs of railway carriages—1769—J. E. Wilson.
Magnesium for illuminating purposes—1695—J. Solomon.
Magnesium light—1696—C. R. Bamber.
Metallic tubes and rods—1749—J. Atkins.
Motive power, apparatus for generating—1656—W. Clark.
Motive power, hydraulic apparatus for producing—1701—J. E. Spanoghe.
Motive power, machine for obtaining—1468—H. Mosely.
Needles—1685—W. Lusty.
Noxious exhalations, sanitary apparatus for preventing—1690—M. A. Muir and J. McIlwham.
Ornaments—1779—H. Emanuel.
Pessary—1141—W. E. Gedge.
Pianofortes—1708—W. E. Newton.
Printing in colours—1702—R. A. Brooman.
Punching apparatus, portable—1706—J. Medhurst.
Quicksilver or mercury, amalgams of—1719—W. E. Newton.
Railways, permanent ways of—1705—J. Whittle.
Railways, points and crossings of—1751—W. McGregor.
Railways, securing the rails of—1713—J. Kirkham.
Railway trains, signalling on—1676—M. Siegrist.
Railway trains, stopping—1684—W. J. Murphy.
Railway trains, stopping and retarding—1759—J. Naveaux.
Refrigerator—1700—M. Ashby.
Rice, &c., cleaning—1777—J. W. Gray.
Riveting and making rivets, machinery for—1709—H. M. Kennard.
Rivets, bolts, spikes, &c.—1686—E. Finch.
Sash windows, apparatus for preventing opening of, from outside—1726—E. Keynolds.
Ships, steering—1496—W. A. Brown.
Shirt front—1725—W. E. Newton.
Steam boilers, furnaces, and engines—1745—E. Elliott.
Surface condensers—1677—W. E. Newton.
Table or seat, portable—1691—R. A. Brooman.
Taps or valves—1656—E. G. Brewer.
Telegraphic communications, effecting and recording—1628—M. Henry.
Telegraphy, submarine and land—1753—I. Baggs.
Tubular structures—1756—E. Duane.
Twist lace machines—1723—R. Boot and J. Coxon.
Typographic and lithographic printing—1665—W. Clark.
Umbrellas and parasols—1673—N. de Becker.
Under vests—1721—J. Webster.
Vices—1761—L. H. G. Ehrhardt.
Water-closets—967—J. I. Darriuet.
Weaving, looms for—1743—J. Keighley.
Woven fabrics, circular pressing machines for finishing—1717—W. Ingham.
Yarns, twisting, doubling, &c.—1644—E. Whalley.
Yarns, &c., to be woven, sizing machines for sizing—1729—D. Mercer, T. Mercer, J. Mercer, and J. Mercer.

INVENTION WITH COMPLETE SPECIFICATION FILED.

Steam and water valves—1834—N. Jenkins.

PATENTS SEALED.

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|-------------------|--------------------|
| 147. W. Jeffreys. | 159. A. W. Preger. |
| 149. E. Deane. | 161. E. D. Farcot. |
| 150. S. Ballard. | 166. W. C. Hicks. |
| 151. J. W. Gregg. | 189. M. Robinson. |
| 153. J. Burch. | 224. R. Mushet. |
| 154. J. Coulter. | |

From Commissioners of Patents Journal, July 18th.

PATENTS SEALED.

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| 170. D. Munro and T. Wright. | 294. J. Ball. |
| 172. J. Turney, jun. & G. Wood. | 300. G. and D. Hurn. |
| 183. T. Lester. | 404. W. Adams. |
| 186. J. H. Wilson. | 434. D. C. Pierce. |
| 188. J. Snider, jun. | 622. J. Howard. |
| 191. C. Brakell W. Hoehl, and W. Gunther. | 609. D., J., and J. Morris. |
| 194. E. Atkinson. | 645. A. C. Henderson. |
| 201. M. A. Dietz. | 819. R. W. Murrell. |
| 221. G. Haseltine. | 836. W. E. Newton. |
| 250. W. E. Newton. | 893. W. M. Fuller. |
| 270. W. H. Cox. | 1233. G. T. Bousfield. |
| 281. J. and W. McNaught, jun. | |

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

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| 2002. C. E. and J. Green. | 2065. W. E. Newton. |
| 2007. T. Hill. | 2035. T. G. Ghislin. |
| 2077. T. Meriton. | 2052. O. F. Morrill. |
| 2042. R. Dunn. | 2060. K. Barrett. |
| 2050. W. Gossage. | |

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

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| 1711. J. Musgrave. | 1591. J. Fowler, jun. |
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