

Journal of the Society of Arts.

FRIDAY, SEPTEMBER 7, 1866.

Announcements by the Council.

EXAMINATIONS, 1867.

The Programme of Examinations for 1867 is now published, and may be had *gratis* on application to the Secretary of the Society of Arts.

Proceedings of Institutions.

SOUTH STAFFORDSHIRE EDUCATIONAL ASSOCIATION.—Mr. Jones, who, in addition to other appointments, has, for the last six years, acted as the agent, and, for the greater part of the time, as the secretary, to the above Association, has recently been elected Secretary to the North of England Iron Trade. The secretaryship of the Association has, for the present, been accepted by Mr. F. Talbot, Messrs. Chance's Schools, Smethwick, near Birmingham, to whom all communications for the Association should in future be addressed.

THE WEST RIDING EDUCATIONAL BOARD held their annual meeting in Ledsham Park, on Wednesday, the 22nd August. To this spot they had been kindly invited by the Rev. J. B. Landon, the vicar of the parish, the examiner in this district for the Oxford Middle-class Examinations. The absence of two gentlemen from this gathering was the subject of general regret. Mr. Barnett Blake, the intelligent, cheerful, and indefatigable secretary of the Board, had passed away since the last meeting, and the feeling of regret was general that the Society had lost his services, and many of the gentlemen present a warm, good humoured, and agreeable friend. The absence of another gentleman, Mr. James Hole, well known and appreciated for his labours in the field of social science, and also for his devotion to the advancement of the interests of the working classes, was also deplored. The Rev. J. B. Landon occupied the chair, and after having alluded to the pleasing character attaching to such a gathering, paid a tribute to the memory of Mr. Barnett Blake, whom he described as a man of unflinching energy, one whom they could not help respecting, and to whom they owed a debt of gratitude for the great benefits he had conferred upon that and many other institutions.—Mr. H. H. Sales, honorary secretary, then read the annual report, which gave a very cheering account of the operations of the Board. Year by year greater interest was manifested in its proceedings, and its influence was extending far and wide.—A number of reports from the managers of Mechanics' Institutions at Halifax, Holbeck, Hunslet, Middlesbro', Ossett, Reeth, Stockbridge, Thirsk, and Wakefield, testified to the value of the stimulus afforded by the Board to the members who are engaged in laudable efforts for self-improvement after labour hours are past, while the opinions in favour of the middle-class examinations of the Board given by experienced schoolmasters were equally satisfactory. Whether the Board shall during the ensuing year increase the usefulness and extent of its operations depended upon the measure of support it received from those upon whom the privilege and responsibility rested of ministering of their substance for the promotion of the national weal, the aggregation of individual success, of which the primal cause is education.—Mr. Baines, M.P., in moving the adoption of the report, expressed the very great pleasure he felt at being present on that occasion. The

Board, he said, owed a very deep debt of gratitude to the reverend chairman for his services, and he believed there was no single individual in the county of York to whom the examinations were more indebted. He further spoke of the good that was being done throughout the country by these examinations, in consequence of the results being recognised in so public a manner; and said that he therefore believed the reverend chairman had conferred a most important service upon the education of Yorkshire by the pains he had taken in superintending the examinations, and he (Mr. Baines) trusted he would continue to favour the Board in the same way.—The Rev. J. Longsdon, in seconding the resolution, spoke of the importance of individual exertion in promoting the success of the educational efforts of the Board.—Mr. Dawson proposed, "That this meeting recognises the great and increasing influence of the West Riding Educational Board, and pledges itself to endeavour to extend its advantages by making known its operations, and by increasing its financial resources."—Councillor Gaunt seconded the proposition.—Mr. J. P. Hodgson moved, "That the several examinations held by the Board provide an effectual mode of testing the soundness of the education imparted in Institutes and schools, and afford healthy stimulants to exertion to teachers and pupils, and are therefore worthy of public support, as the benefits thus conferred are shared by the community at large."—Mr. Traice supported the motion, which, in common with others of a more formal character, were unanimously agreed to.—The children of the Orphan School then sang in a pleasing manner several vocal selections, after which Mr. Blyth, formerly organist at Magdalen College, Oxford, favoured the company with two songs. The proceedings, which had throughout been of a very harmonious character, terminated with the singing of the National Anthem.

EXAMINATION PAPERS, 1866.

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

(Continued from page 651.)

LATIN AND ROMAN HISTORY.

THREE HOURS ALLOWED.

SECTION I.

Translate:—

Sin autem ad pugnam exierint nam saepe duobus Regibus incessit magno discordia motu;
Continuoque animos vulgi et trepidantia bello Corda licet longe praesciscere; namque morantes Martius ille acris rauci canor increpat, et vox Auditur fractos sonitus imitata tubarum;
Tum trepidae inter se coeunt pennisque coruscant, Spiculaque exacunt rostris, aptantque lacertos, Et circa regem atque ipsa praetoria densae Miscentur, magnisque vocant clamoribus hostem;
Ergo ubi, ver nactae sudum clamposque patentes, Erumpunt portis, concurritur, aethere in alto Fit sonitus, magnum mixtae glomerantur in orbem, Praecipitesque cadunt—non densior aere grandio, Nec de concussa tantum pluit ilice glandis.

1. Parso fully, giving both syntax and accidence, the words *regibus, corda, sonitus, rostris, concurritur, glandis*.
2. Give the present and perfect tenses indicative active and the supines of the verbs *praesciscere, fractos, miscentur, nactae, erumpunt, cadunt*.

SECTION II.

Ipsa ego te, medios quum sol accenderit aestus,
Quum sitiunt herbae et pecori jam gratior umbra est
In secreta senis ducam, quo fessus ab undis
Se recipit, facile ut somno aggrediare jacentem.
Verum ubi correptum manibus vinclisque tenebis,
Tum variae eludent species atque ora ferarum:

Fiet enim subito sus horridus atraque tigris
Squamosusque draco et fulva cervice laena,
Aut acrem flammae sonitum dabit atque ita vinclis
Excidet, aut in aquas tenues dilapsus abibit.
Sed quanto ille magis formas se vertet in omnes,
Tanto, nate, magis contende tenacia vincla,
Donec talis erit mutato corpore, qualem
Videris, incepto tegetet quum lumina somno.

1. Parse fully, giving both syntax and accidence, the words *pecori, senis, somno, correptum, cervice, corpore*.

2. Give the present and perfect tenses indicative active and the supines of the verbs *ducam, aggrediare, dabit, dilapsus, contende, videris*.

SECTION III.

Translate:—

Tum Sabinae mulieres, quarum ex injuria bellum oratum erat, crinibus passis scissaque veste victo malis muliebri pavore ausae se inter tela volantia inferre, ex transverso impetu facto dirimere infestas acies, dirimere iras, hinc patres hinc viros orantes, ne se sanguine nefando soceri generique respergerent, ne parricidio macularent partus suos, nepotum illi, hi liberum progeniem. "Si adfinitatis inter vos, si conubii piget, in nos vertite iras. nos causa belli, nos vulnere ac caedium viris ac parentibus sumus. melius viderimus quam sine alteris vestrum viduae aut orbae vivemus." movet res cum multitudinem tum duces. silentium et repentina fit quies; inde ad foedus faciendum duces prodeunt, nec pacem modo sed civitatem unam ex duabus faciunt, regnum consociant, imperium omne conferunt Romam.

1. Parse fully, giving both syntax and accidence, the words *crinibus, acies, sanguine, nepotum, vulnere, civitatem*.

2. Give the present and perfect tenses indicative active and the supines of the verbs *inferre, respergerent, movet, prodeunt*.

3. Explain why *respergerent* is in the subjunctive mood and imperfect tense.

SECTION IV.

Translate:—

Tum vero in dies infestior Tulli senectus, infestius coepit regnum esse. jam enim ab scelere ad aliud spectare mulier scelus, nec nocte nec interdiu virum conquiescere pati, ne gratuita praeterita parricidia essent: non sibi defuisse, cui nupta diceretur, nec cum quo tacita serviret; defuisse, qui se regno dignum putaret, qui meminisset se esse Prisci Tarquini filium, qui habere quam sperare regnummallet. "Si tu is es, cui nuptam esse me arbitror, et virum et regem appello: sin minus, eo nunc pejus mutata res est, quod istic cum ignavia est scelus. quin accingeris? non tibi ab Corintho nec ab Tarquinis, ut patri tuo, peregrina regna moliri necesse est; di te penates patrique et patris imago et domus regia et in domo regale solum et nomen Tarquinium creat vocatque regem. aut si ad haec parum est animi, quid frustraris civitatem? quid te ut regium juvenem conspici sinis? facesse hinc Tarquinos ut Corinthum, devolvere retro ad stirpem, fratris similior quam patris.

1. Parse fully, giving both syntax and accidence, the words, *scelere, sibi, regno, penates, animi, Tarquinos*.

2. Give the present and perfect tenses indicative active and the supines of the verbs *diceretur, accingeris, conspici, facesse*.

3. Explain why *serviret* is in the subjunctive mood, and why *defuisse* in the infinitive.

SECTION V.

1. Describe the office of Praetor. When was the office instituted, and when opened to the plebeians?

2. Give an account of the first Latin league.

3. Why was the Tribunate instituted, and what were its powers and privileges?

4. Write a short history of Cincinnatus.

5. When did Rome become a maritime power? Give an account of her naval successes.

6. Give an account of the first Punic war.

SECTION VI.

1. When did Rome first come into contact with Greece, and by what steps was she led on to the conquest of that country?

2. Give an account of Cicero.

3. Give an account of the Social War.

4. On what occasions was the Roman State in very great danger? and how was it saved?

5. Write a short history of Pompey.

6. What was the treaty of Brundisium? what were its results?

FRENCH.

THREE HOURS ALLOWED.

PART I.

Candidates for a third-class certificate are requested to translate into English the two following extracts, and to answer the grammatical questions thereto annexed, in the order in which they are placed. This first part is all that will be expected of them.

Translate:—

Il y avait du temps de François 1^{er} un brave paysan du Périgord, qui s'appelait Bernard Palissy. Dans ce temps-là, n'avait pas des assiettes de faïence qui voulait. C'était une fabrication dont les Italiens seuls possédaient le secret, et Bernard, qui savait déjà quelque chose en sa qualité d'ouvrier verrier, se mit en tête de le découvrir à lui tout seul. Le voilà donc qui se fait potier sans demander conseil à personne, qui bâtit des fours, ramasse du bois comme il peut, fabrique ses premiers pots tant bien que mal, allume son feu, enfourne, et attend. Il en eut pour 15 à 16 ans avant de réussir, 15 à 16 ans d'essais ruineux qui auraient découragé un grand seigneur. Mais lui, dès qu'il avait pu ramasser quelque argent avec ses vitraux, il retournait à son œuvre avec une persévérance indomptable, insensible à la misère, sourd aux moqueries des voisins, inébranlable aux malédictions de sa femme, qui était furieuse, comme bien vous pensez, de faire avec lui de l'héroïsme, sans en avoir la moindre envie. Or, un beau jour, voilà une grande rumeur à La Chapelle-Biron: c'était son village. "Bernard est devenu fou," disaient les gens; "il brûle sa maison pour faire cuire ses pots!" Et c'était, ma foi, la vérité. Le bois étant venu à manquer, pendant qu'une fournée était au feu, Bernard avait commencé par prendre la palissade du jardin, puis les grosses tables, puis enfin le plancher de la maison. Ce que pouvait dire la femme, je vous le laisse à juger; mais lui n'écouait rien, et les yeux fixés sur l'implacable fourneau, comme un soldat sur sa consigne, il jetait et jetait, ne pensant qu'à son œuvre en danger. Le plafond aurait suivi le plancher, si les pots n'avaient fini par se cuire à point.—Jean Macé, *Histoire d'une Bouchée de Pain*.

And also:—

Un jour que de l'Etat le vaisseau séculaire
Fatigué trop long-temps du roulis populaire,
Ouvert de toutes parts, à demi démanté,
Sur une mer d'écueils, sous des cieus sans étoiles,
Au vent de la Terreur qui déchirait ses voiles,
S'en allait échouer la jeune Liberté;
Tous les rois de l'Europe, attentifs au naufrage,
Tremblèrent que la masse, en heurtant leur rivage,
Ne mit du même choc les trônes au néant;
Alors, comme forbans qui guettent une proie,
On les vit tous s'abattre avec des cris de joie,
Sur les flancs dégarnis du colosse flottant.
Mais lui, tout mutilé des coups de la tempête,
Se dressa sur sa quille, et relevant la tête,
Hérissa ses sabords d'un peuple de héros,
Et rallumant soudain ses poudres désarmées,
Comme un coup de canon lâcha quatorze armées,
Et l'Europe à l'instant rentra dans son repos.

A. Barbier, *Iambes*.

1. Give the five primitive tenses of each of the fol-

lowing verbs which occur in the above extracts:—*voulait savant, se mit, se fait, bâtit, peut, attend, est devenue disaient, cuire, prendre, aurait suivi, ouvert, vit, s'abattre.*

2. Explain the meaning of *brave* as used in the first sentence of the first extract. Show also the difference between *un grand homme* and *un homme grand*.

3. Name the nominative case of the verb *avait*, in the second sentence of the same extract:—"Dans ce temps là," &c.

4. What is the singular of *vitreaux*? Give also the singular of the substantive *bauz*.

5. "*De l'héroïsme.*" Is the *h* silent or aspirated in *héros, héroïne, and héroïque*? Explain, in reference to this question, the exact nature of the aspirated *h* in French.

6. "*Les yeux fixés sur, &c.,*" (last line but three of the first extract). Why not *ses yeux*? Give the rule.

7. Explain the word *ne* which begins the 9th line of the second extract. Can you give other instances of a similar construction?

8. Give, with examples taken from the second extract, the different meanings and constructions of the preposition *de*.

9. Parse the first six lines of the second extract.

10. "*Il en eut pour 15 à 16 ans, &c.*" When are you to render 15 or 16 by 15 *ou* 16, when by 15 *à* 16?

11. Give the different meanings, with a corresponding difference in the gender, of the words: *crêpe, hymne, mémoire, mousse, poêle, tour, voile.*

12. Write in full:—Page 300; 220 hommes; l'an 1500; 85 volumes; chapitre 80; 500 chevaux.

13. Explain the grammatical difference between *chaque* and *chacun*; between *notre, votre, and le nôtre, le vôtre*; between *quelconque* and *quiconque*; and between *quelque* and *quel que*.

14. Translate and explain the following words:—*crû, crié; creuse; cours, court; eu, eux; font, fonts; las; les; lis; lus; mets, mes; mis; mors, mort; ris, riz; va; vis; vive; vu.*

PART II.

Candidates for a second-class certificate are to answer the last three questions in Part I., together with those in Part II., and to translate the English extract and idiomatic expressions which follow:—

1. How do you convey in French the emphasis or contradistinction implied in each of the following sentences?

*He may think so, but I do not.
You will injure yourself, not him.
Your ways are not my ways.
A la guerre comme à la guerre, as we Frenchmen say.*

2. Being given these two sentences:—They made him drink; they made him drink some wine; the pronoun "him" will be rendered by a different case in each sentence. Explain this peculiar rule, and name the other verb, besides *faire*, to which it applies.

3. Which are the words that are always accompanied by the pronoun *en*, when they are the "object" of the verb, and the noun to which they refer is not expressed at the same time?

4. In what particular sense is the word *autrui* used to express *another* or *others*?

5. Give the adjective that corresponds to each of the following nouns:—*Ciel, terre, mer, an, trimestre, mois, semaine, jour, siècle, moine, église, évêque, matin, nuit, tête, os, muscle, nerf, sang, vie, ail, oreille, nez, bouche, poil, graisse, huile, fer, bitume, eau, pain, air, travail, sécheresse, secret, calme, apathie, énergie, santé, vol.*

6. Distinguish between "*C'est à lui à parler*" and "*c'est à lui de parler*," and also between "*Il impose*" and "*Il en impose*."

Translation:—

A friend of Dean Swift one day sent him a turbot as a present by a servant lad who had frequently been on similar errands, but who had never received the most trifling mark of the Dean's generosity. Having gained admission, he opened the door of the study, and abruptly

putting down the fish, cried very rudely, "Master has sent you a turbot." "Young man," said the Dean, rising from his easy chair, "is that the way you deliver your message? Let me teach you better manners; sit down in my chair; we will change situations, and I will show you how to behave in future." The boy sat down, and the Dean, going to the door, came up to the table with a respectful pace, and making a low bow, said, "Sir, my master presents his kind compliments, hopes you are well, and requests your acceptance of a small present." "Does he?" replied the boy; "return him my best thanks, and there's half-a-crown for yourself." The Dean, thus drawn into an act of generosity, laughed heartily, and gave the boy a crown for his wit.

Idioms:—

1. On lui a donné du fil à retordre.
2. J'ai pensé coucher à la belle étoile.
3. Envoyez-les donc promener une fois pour toutes.
4. Vous avez fait là un pas de clerc.
5. Ne vous y fiez pas; il n'est pire eau que celle qui dort.
6. Ne vous laissez pas prendre à ses airs de sainte-n'y touche.
7. C'est un homme tout rond qui n'y va pas par quatre chemins.
8. Je vous le dis en bon français, cela ne me va pas du tout.
9. Il fait le bon apôtre, mais je sais à quoi m'en tenir.
10. Touchez là, et qu'il n'en soit plus question.
11. Il fallait voir comme ils s'en sont donné à cœur-joie!
12. Les pauvres gens, ils auront bientôt repris le collier de misère.

PART III.

Candidates for a first-class certificate are expected to translate the above idioms and English extract, and to answer in French the grammatical questions Nos. 1, 3, and 5, in Part II., as also the following:—

Literature.—1. Show the influence exercised upon their age, in and out of France, by the great literary men of the 18th century, and more especially by Voltaire and Montesquieu.

2. Name the principal works of J. J. Rousseau, Helvétius, Diderot, D'Alembert, Le Sage, Raynal, Buffon, Condillac, Vertot, Bernardin de St. Pierre, Volney, Beaumarchais, and Condorcet. Give a short critical account of any one of those works.

History.—Explain some of the most ostensible causes which brought about the Great Revolution of 1789.

(To be continued.)

PARIS EXHIBITION OF 1867.

The whole of the Champ de Mars, as far as the foot-paths of the Avenues de Suffren and de la Bourdonnais, from the Quai d'Orsay, and from the road that passes in front of the Ecole Militaire, is enclosed with a palisading of strong planking four metres in height and spiked on the top. There is now no opening on the north side of this vast circumference. On the south, east, and west, there are still three small openings, which will, however, be closed by the 15th of this month. There is extraordinary activity in the workshops of Montataire. The north-eastern and north-western corners of the Champ de Mars will soon be planted with trees from every country. The little park of the Viceroy of Egypt will be planted with palms. The roofing of the Gothic church, which will contain the exhibition of religious art, is in progress. The platform and the parapets of the iron bridge on the Quai d'Orsay are nearly finished. This will put the exhibition in direct communication with the part which is being organised above the Pont de Jena on the left bank. The framework of the roof of the immense building of the International Club, in front of the Pont de Jena, on the right hand on entering the Champ de Mars, will soon be put up. It is of two

stories, with a roof over part of the ground floor and sixteen windows coming down to the floor at the front and back, and eight at each end on each story. A remarkable city is being raised up, as if by enchantment, in the four corners of the Champ de Mars, the part not required for the Palace of the Exhibition. Two very curious lakes, with rocks, are constructed in front of the Ecole Militaire. The four groups of figures on the pedestals in angles of the Pont de Jena are being restored. The road workmen are setting out the granite kerbing in front of the Pont de Jena, and at the north on the ground of the Trocadero—1st, La Place du Roi de Rome; 2nd, the new boundaries of the Quai de Billy; 3rd, the Boulevard de Jena; 4th, the Boulevard de Passy, which corresponds with the Boulevard de Jena.

Of all the specimens of art, of industry, and of human genius, which will be admired in the Exhibition of 1867, one of the most singular will be a building in which will be brought together everything relating to religious art, and will cover a site for which has been reserved an area of 1,875 square metres. The building will be divided longitudinally into three naves. Immediately on entry there are two vast chapels, forming the arm of a cross; in the lateral naves will be placed two other chapels, making five which radiate round the apse. The building will be lighted by forty openings, in which will be exhibited painted glass in different styles. The chapel will unite in the interior all that art can produce for catholic worship—altars, pulpits, statues, confessionals, ways of the cross, bronzes, chasubles and other sacerdotal vestments, musical instruments, the great organ, the choir organ, harmonium, pavements, windows, wall paintings; and these objects being in harmony with the whole will be duly appreciated. On the outside the public will have brought before them everything relating to the ornament of religious structures—different modes of roofing, pedestals, galleries, spires, works of art, works in lead and zinc, and all that tends to give to the building an architectural character.

MUSICAL EDUCATION IN FRANCE.

The whole of the classic Solfeggios of Chérubini, Méhul, Catel, and Gossec, and the minor Solfeggio and Tables of Musical Readings of M. Edouard Batiste, adopted in the junior classes of the Conservatoire of Paris, have been re-edited, and two reports have been made upon the work by the Committee of Studies of the Conservatoire, headed by its Director, M. Auber. In the report on the former work the committee says, these celebrated Solfeggios have been and still are the basis of instruction in the Conservatoire, and therefore the new edition of the work of the great masters, published by M. J. L. Hengel, with the assistance of M. Edouard Batiste, professor of the Conservatoire, and who was for many years the accompanist of the examinations and competitions, has been examined in its most minute details. The traditions of these classic solfeggios were familiar to M. Edouard Batiste, and he has proved the fact in his remarkable *basses chiffrées* for the piano or organ. This work, executed with as much conscientiousness as talent, enables pupils as well as professors to accompany with their veritable harmony the solfeggios of the Conservatoire, rendered also more practical and more progressive by means of transpositions and double notes, calculated to facilitate their study in all voices. The best lessons of the solfeggios of Italy are included in the new edition, for the study of the solfeggio should not be confined to the formation of readers, it should also prepare singers, as is stated in the preliminary instructions of the great masters, Chérubini, Méhul, Catel, and Gossec, for the development and preservation of the voice. The committee remark that the editor of the new edition has not confined himself to the production of a new and very correct version of the solfeggios of the Conservatoire, but has also taken equal care in correcting errors in the early editions without any modifi-

cation whatever of the texts and *basses chiffrées*. Young musicians may therefore compare the two editions, and make a complete study of the *basses chiffrées*, with relation to practical harmony.

As regards the minor or introductory solfeggio of M. Edouard Batiste, and the exercises which form its indispensable atlas, the committee says, that although composed for the youngest voices, and for purely elementary classes, the work is remarkable for its exercises, and its lessons in melody irreproachable in their construction, as well as by its interesting and purely-written accompaniments. The musical principles are therein carefully set forth; the major and minor scales, as well as the modulations, are presented and defined with great clearness; and all the rhythmical combinations of the different measures are developed with that progressive order which evinces a laborious and patient experience in the teaching of music. Finally, the reproduction, in a large form, of the exercises in question, admit of their introduction in the combined classes of Orpheonists, as well as in colleges and schools.

The reports of the committee in question are also approved by the musical section of the Institute of France, —MM. Carafa, H. Berlioz, and Ch. Gounod, by all the professors of the Conservatoire, not members of the committee, and by the Directors of the schools of Lille, Toulouse, Marseille, Metz, and Nantes.

AGRICULTURAL COMMISSION IN FRANCE.

The Minister of Agriculture and Public Works has issued a list of interrogatories to be used in the agricultural inquiry ordered to be undertaken throughout the empire, by a decree of the present year. These interrogatories, which are sent to the prefects for distribution, apply only to that portion of the evidence which is to be taken in writing; the oral examinations will commence in the course of September. At first it was intended that the labours of the Commission should be divided into six parts, representing climacteric groups of departments, but, on examination, this arrangement has been found insufficient, and the divisions, or groups, have been increased to twenty-eight, so that each branch of the inquiry will only include three or four departments. The interrogatories now issued are 161 in number, and if the answers given meet the views of the commission a vast amount of valuable information will be obtained. The questions are ranged in five divisions, as follows:—

1. General conditions of agricultural production—State of agricultural property—Mode of working—Transmission of property—Conditions of holding—Capital, and means of credit—Wages and salaries—Manure, and improvements—Other costs of cultivation.
2. Special conditions of agricultural production—Methods of cultivation—Waste land—Reclamation—Drainage—Irrigation—Meadow-land and forage—Animals—Cereals—Alimentary products, not cereals—Industrial agriculture—Sugar and spirits—The Vine—Fruit-trees—Silk-worm culture—Proportion of breadth of land and products cultivated.
3. Circulation and placing of agricultural products—Markets.
4. Legislation—Local regulations—Treaties of commerce.
5. General questions.

It is well known that the appointment of this important Commission was caused by the reiterated complaints of distress by farmers and others, and to a considerable extent also by the strong feeling still entertained in the agricultural districts of France against any approach to free trade. The minute subdivision of land and the consequent want of capital as regards the great mass of the farming population, render this question a peculiarly difficult one in France, and it is to be hoped that the inquiry in question will have the effect of removing many errors, and laying the foundation of a real knowledge of

the condition of the agricultural population, always difficult of attainment.

THE AGRICULTURAL RESOURCES OF ITALY.

The following is taken from an Italian source :—

The agricultural industry of Italy is much inferior to that of other countries, as may be seen from the following comparison :—

The superficial area of Italy consists of 30 millions of hectares,* or 74 million acres, thus distributed :—

Land cultivated	14,589,559
Woods	4,835,529
Pastures	6,717,939
Marshes and unproductive stagnant water.....	4,717,746

Total hectares 30,860,773

At present the proportion of cultivated to uncultivated land is as follows :—

14 to 30	in Italy.
14 " 15	" England.
34 " 53	" France.

The proportion of the produce of cultivated land in various countries is per hectare—

In Belgium	281 francs
" England	215 "
" France	176 "
" Italy, part irrigated	156 "
" " unirrigated	78 "

It is calculated that the total value of agricultural produce amounts—

	francs.
In England	4,500 millions.
" France	5,000 "
" Italy	2,350 "

The reason of this difference between the agricultural produce of Italy and that of other countries is that they have greater capital and machinery at command.

The spirit of enterprise and the application of artificial resources make it increase elsewhere with surprising rapidity, but in Italy it stands still, with a little increase in irrigation, carried on with a small amount of stock, with few machines, and with little prospect of immediate improvement.

In some countries agricultural industry has recently made great progress. In the western provinces of the United States, in the last two years, there have been in cultivation 25,145,000 acres, equal to about 10½ millions of hectares of land. The city of Chicago, a few years ago a small Indian village, now contains 250,000 inhabitants, is magnificently built, and its granaries are capable of containing more than three million hectolitres of grain. And to give an adequate idea of the gigantic increase of the products and trade of the neighbourhood of this city, it is enough to mention that, whilst in 1838 there were only exported 78 bushels of grain, in 1864 there were taken out of the granaries 47,124,491 bushels of grain, equal to about 17½ millions of hectolitres†, besides 290,000 barrels of flour.

The production of grain in the United States has reached such vast proportions that it has already had a sensible effect on cereals in Europe. England and France, which imported large quantities of grain nearly exclusively from the Black Sea and Baltic for some years, take a good part of their provisions from the United States, and only in 1865 imported 15 millions hectolitres, to the value of 300 millions of francs, without calculating flour and American spirits, an article obtained by the distillation of grain, of which there are immense works at Bordeaux, Marseilles, Genoa, and in the ports in the Levant.

* A hectare = 2·49 acres.
† A hectolitre = 2½ bushels.

Besides producing a great quantity, the Americans of the United States can produce it with less expense than the countries of Europe. Ploughing by steam, sowing by steam, reaping and threshing by steam, with their machines five men do the same work that 45 men in Italy do without them. The grain at Chicago costs a little more than 5 francs per hectolitre, and as much again the freight to Liverpool, and if the production of it increases in like proportion as that of late years, before long the markets not only of England and France, but also those of Italy, will be inundated with American grain and flour. It also must be remembered that in the United States the production is sustained by credit founded on the numerous banks.

It is truly deplorable that, in comparison with the recent progress of agriculture in other countries, Italy, a traditionally agricultural country, should remain so much behind, also that her position has become worse.

The cryptogamous disease of the silkworm having decimated the two most profitable harvests of agricultural industry of the peninsula, it is a fact that our produce is in a worse condition than it was twenty years ago.

An examination in detail of the principal products will convince us more as to the agricultural inferiority of Italy.

Generally speaking, the most important product in Europe is that of cereals, and of that the first is wheat. From the best statistical data that we have is deduced the following table of the annual produce of wheat in the various European states :—

	Hectolitres.
Italy	35,000,000
France	90,000,000
Great Britain	38,060,000
Belgium	4,000,000
Prussia	8,000,000
Spain	18,000,000
Russia	80,000,000

It will be seen, then, that Italy, taking into account her territorial extent, her population, and the fertility of her soil, produces less wheat than other countries.

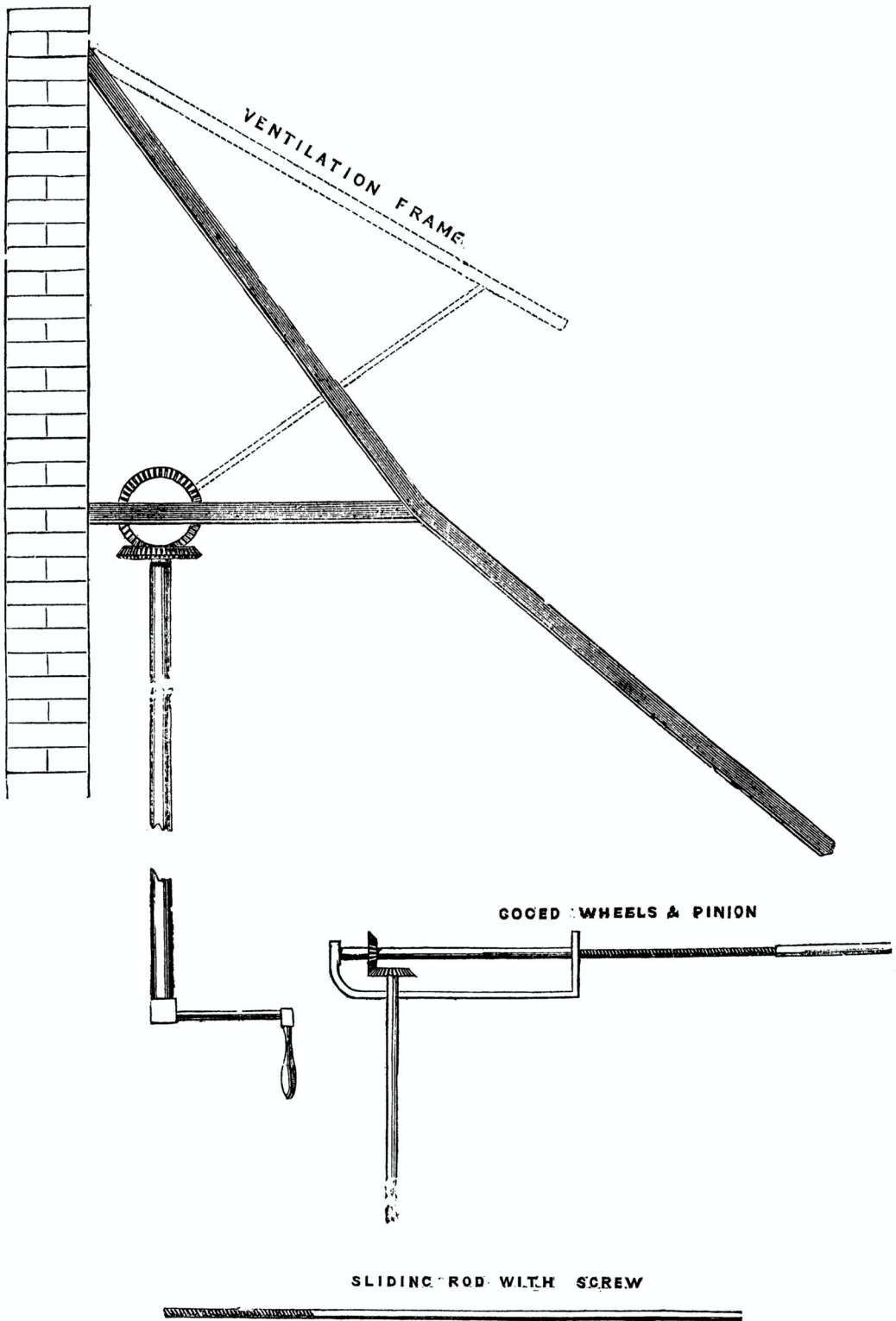
A product that should be named among the principal sources of wealth of the peninsula is wine, the annual crop of which amounts to 28,000,000 hectolitres (616,000,000 gallons) at least, of various qualities; but our wine-growers are still far from comparison with those of France and Spain, and the exportation of this product is limited to a little over 200,000 hectolitres, of the approximate value of 5,000,000 francs, while France, which produces about 40,000,000 hectolitres, exports 4,000,000, to the value of 280,000,000 francs, and Spain, which produces 20,000,000 hectolitres of wine, exports 250,000, to the value of 12,000,000 francs.

Amongst the agricultural products, and, at the same time, an industrial product, of Italy, silk comes, perhaps, first, calculated from 2,000,000 to 3,000,000 kilogrammes, the statistical data to this effect being very deficient and contradictory. In the last ten years, however, the disease of the silkworm has occasioned a great diminution in the collection of cocoons, and hence a great impoverishment in the silk districts. Ascribing the evil to the quality of eggs, the farmers make large provision of foreign ones, at no slight expense, but the result does not correspond with the expectation, the produce, instead of increasing presents a further diminution, and the acquisition of foreign eggs that succeed badly, still further impoverishes their means.

BEARD'S SYSTEM OF VENTILATION.

The following is a description of the system of ventilation, for which a prize of £5, given by the Society of Arts, was awarded to Messrs. Sanders, Frewen, and Co., at the International Horticultural Exhibition :*—

* See present vol. of *Journal*, p. 577, class 231 D.



BEARD'S VENTILATION FOR GREENHOUSES.

In this system one set of the lights that constitute the ventilators are placed on the ground level, and the other at the highest part of the building, it being the inventor's opinion that in many hothouses and other buildings more than one-third of the atmosphere continues unchanged, owing to the air being admitted at too high an elevation. This evil is believed to be cured when the fresh air is admitted at the ground line, where in hothouses the heating apparatus is generally placed, consequently the incoming air will be warmed in its passage before it reaches the plants. Another advantage of this method is said to be the power of admitting the fresh and discharging the impure air during wet weather without allowing the entrance of the rain. This can either be done by placing the ventilating lights in the back wall or by raising them above the general angle of the roof. The higher the angle of the ventilator is raised above the roof the further the ventilator can be opened without admitting the rain.

The principal merit in this mode of ventilation is the facility and rapidity with which the ventilators are opened and closed. Any amount of air, from a quarter of an inch to one foot or more, can be given along the entire length of a building very quickly and easily. The mechanical arrangement for this purpose consists of a horizontal travelling rod, furnished with arms attached to the ventilators. One end of this rod is furnished with an endless screw, working in a moveable socket, in a fixed frame. This socket is turned by a pair of bevelled wheels attached to a spindle, descending vertically from the travelling bar. The travelling bar or rod is supported on friction rollers, and the entire weight of the lights and the chief force of the motive power rest upon the screws, so that the handle on the end of the spindle can be turned and the lights opened with the greatest ease. The accompanying cut explains the arrangement.

Manufactures.

LUCIFER MATCH FACTORY.—The Frankfort (N. Y.) match factory is noted for the wonderful and curious machinery used in the manufacture, the invention of Mr. Gates, and is probably one of the most perfect manufactures of its kind in the world. Some idea may be had of the amount of work done at this establishment when it is known that 720,000 feet of pine, of the best quality, are used annually for the matches, and 400,000 feet of bass-wood for cases. The sulphur used annually for the matches is 400 barrels, and the phosphorus is 9,600 lbs. The machines run night and day, and 300 hands are employed at the works. It takes 500 lbs. of paper per day to make the light small boxes for holding the matches, and four tons of pasteboard per week for the larger boxes; 66 lbs. of flour per day is used for paste, and the penny stamp required by Government on the boxes amount to the snug little sum of 1,440 dollars per day. There are four machines in use for cutting, dipping, and delivering the matches. The two-inch pine plank is sawed up the length of the match, which is 2½ inches. These go into the machine for cutting, where, at every stroke twelve matches are cut, and by the succeeding stroke pushed into slats arranged on a double chain 250 feet long, which carries them to the sulphur vat, and from thence to the phosphorus vat, and thus across the room and back, returning them at a point just in front of the cutting-machine, and where they are delivered in their natural order, and are gathered up by a boy into trays, and sent to the packing-room. Thus 1,000 gross, or 144,000 small boxes of matches are made per day. The machines for making the small, thin paper boxes and their covers are quite as wonderful and ingeniously contrived as those that make the matches. A long coil of paper, as wide as the box is long, revolves on a wheel, one end being in the machine. It first passes through rollers, where the printing is done, from

thence to the paste-boxes, where the sides and ends only are pasted; from thence to the folding-apparatus, where the ends are nicely folded, and the whole box is pasted together and drops into a basket. A similar machine is at work at the covers, and thus 144,000 boxes per day are manufactured.

SILVER.—Silver Peak is believed to be as pre-eminent over all silver mountains as the Iron Mountain of Missouri is superior to all other iron deposits. Silver Peak is situated east of San Francisco, on the eastern side of the Sierra Nevada, and nearly one degree south of the city of Austin. It is some two miles from Castle Mount, an old extinct crater, about 5,000 feet above ocean level. Near Silver Peak is an extensive deposit of salt, and not far distant a hill of pure sulphur. The whole country has a naked appearance, being quite destitute of vegetation, and bristles with mountains scattered over a plain of great extent. The dreaded "Valley of Death," upon the plains of which, along the "old Spanish trail," travellers have suffered so much, lies but a short distance to the south-east of the crater of Silver Peak. Little Salt Lake, in Southern Utah, lies directly east of Silver Peak. At first the searchers after deposits of the precious metals confined their searches to the Pacific side of the Sierra Nevada, but discoveries in New Mexico, Arizona, and Virginia City induced a thorough examination of the east side of the Sierra Nevada. This resulted in great success, the most brilliant of which is found in the neighbourhood of Austin, on the line of the great overland mail, where a city has sprung up within three years, which Senator Nye says contains a population of 10,000. From along this line of exploration, the miners are rapidly extending their operations, both north and south. Recently (within six months) they came upon this immense deposit near Castle Mount. Twelve exceedingly rich lodes, or "ledges," as the miners call them, were discovered on that single mountain. This discovery in an unexpected region is believed to be the most valuable yet developed. A new deposit, superior even to the Comstock lode, which has furnished so many millions of silver, is about to pour into our market its limitless supply of this precious metal.

WOOD PAPER.—The constantly increasing price of rags has led paper-makers for some years past to turn their attention to the discovery of other materials suitable for paper stock. All kinds of plants, from those which grow near our own door to the luxuriant growths of tropical regions, have been experimented on with but partial success; but it now seems probable that for the future our main source of supply will be the forest. It is at least a century, and we do not know how much longer ago, since paper was made experimentally from wood; and, notwithstanding repeated improvements, the requirements of cost and quality have not until recently been met. The manufacture of wood paper is now, however, an accomplished fact. There are two large establishments, near Philadelphia, where it is carried on. In one of these a paper containing 60 per cent. of wood pulp is turned out, and in the other, which is on an immense scale, an excellent paper for printing purposes, composed of 80 per cent. wood and 20 per cent. straw, is made. The larger and more successful establishment is capable of turning out from 24,000 to 30,000 lbs. of pulp daily.

THE COTTON CROP IN THE UNITED STATES.—Dr. Forbes, the Cotton Commissioner of the India Government, was deputed about two months since to visit the cotton-producing States of America, and after a tour through the whole of them, with the exception of Texas, he has now completed his report. His opinion differs from the impressions thus far current in the Northern States, and is unfavourable as to the probable result of the crop. He proceeded through Virginia into the Carolinas, North and South, whence he subsequently passed through Georgia, Alabama, Louisiana, Mississippi, Arkansas and Tennessee. In North Carolina he found

that little had been sown this year. In South Carolina, where, as regarded care in cultivation, the symptoms were better than in any of the other states, he estimates the sowing to have been not more than a third of the usual quantity. The estimated production of the two States was not over 100,000 bales. In Georgia the condition was much worse, the plants being stunted and choked with grass, which in many places had overtopped them. The assigned causes of the failure were scarcity of good seed, much of that which had been used having been from damaged cotton grown before the war, and scarcity of labour. Originally it was expected this State would yield 250,000 bales, but Dr. Forbes expresses a conviction that 150,000 will be the limit. In Alabama the cultivation seemed better, and there were apparently fewer failures from bad seed; but in some of the best districts floods and rains have destroyed all prospect of a crop, and the estimate for this state, which before the war used to contribute nearly a million of bales, is now under 200,000. As regards the states watered by the Mississippi—Louisiana, Mississippi, Arkansas, and Tennessee—the desolation from the war was found to be complete. For hundreds of miles along the course of the river scarcely a planter's house or establishment, with the exception of the slave quarters, which have been mostly deserted, had been spared. In what is known as the upland cultivation there was a large proportion of cotton compared with other crops, but grass and weeds were universally gaining the supremacy. The consequence is that these four states, which formerly raised in the aggregate 2,600,000 bales, will now, it is believed, not give more than 550,000. It seems to be generally admitted that not more than half the number of the negroes employed in the cotton fields before the war have this year been at work, and that the labour of each man under freedom has not been two-thirds of its former value. Dr. Forbes did not visit Texas, but from that state he heard that, although the cotton crop would be deficient, owing to the lateness of the season, they were better off for labour there than in the other sections of the country. Taking the most favourable view he is able to form, the conclusion to which Dr. Forbes finds himself forced is that from all the states, including Texas, the aggregate yield this year will not be more than 1,200,000 bales, and, looking at the home demand for the supply of the Northern manufactories, he thinks it would be vain to calculate on their being more than 200,000 or 300,000 bales available for exportation. He does not lose sight of the fact that estimates of a much more favourable character have been circulated, both in the North and South, by parties too respectable to be suspected of the slightest intentional misrepresentation, but it is said that the planters who stood in urgent need of advances from the New York houses at the commencement of the season gave the best possible reports of the prospects of the crop, which, indeed, were then not altogether unwarranted, and that it is to subsequent circumstances that the entire change of condition is to be attributed.

MAGNESIUM LAMP.—At the *soirées* of the British Association, at Nottingham, the large refreshment annexe was lighted by two magnesium lamps of a novel character, the invention of Mr. H. Larkin. The distinguishing peculiarity of these lamps (which may be variously arranged to suit widely different purposes) is, that they burn magnesium in the form of powder or filings, instead of ribbon or wire; and that they do not depend on clockwork or any similar extraneous motive-power for their action. The metallic powder is contained in a large reservoir, having a small orifice at the bottom through which the powder falls simply by its own gravity, like sand in an hour glass. In order that a sufficient orifice may be used, and to facilitate the steady flow of the powder, it is mixed with a quantity of fine sand or other diluting material; the proportion of powder to sand being varied according to the amount of light required. After leaving the orifice

of the reservoir the stream of metallic powder and sand falls freely through a metal tube, into the upper end of which a small stream of ordinary gas is also introduced. The mingled streams of powder and of gas thus flow down the tube and escape together at its mouth, where they are ignited, and continue burning with a brilliant flame as long as the supply of gas and metal is maintained. At the metal becomes consumed, the sand which it was mixed falls harmless into a receptacle provided for it, while the fumes are entirely carried away by a small tube-chimney into the outer atmosphere. Immediately below the orifice of the reservoir there is a valve, to either regulate the quantity or entirely arrest the flow of the metallic powder, which valve may be opened and shut at pleasure. When it is desired to light the lamp, the gas is first turned on, just sufficiently to produce a small jet at the mouth of the tube, which small jet being once kindled may be allowed to burn any convenient time, until the moment the magnesium light is required. All that is then needed is to turn on the metallic powder, which instantly descends and becomes ignited as it passes through the burning gas. This action, of turning on and off the metallic powder, may be repeated without putting out the gas, as often and as quickly as desired; so that, in addition to the ordinary purpose to which lamps are applied, an instant or an intermittent light of great brilliancy, suitable for signals or for lighthouses, may be very simply produced with certainty of effect and without the smallest waste of metal. The first evening an objection was made that the blue tone of the light created a cold and somewhat ghastly effect. On the second occasion Mr. Larkin remedied this by mixing with the magnesium a certain quantity of nitrate of strontia.

CULTIVATION OF COTTON.—At a recent meeting of the executive committee of the Cotton Supply Association, a letter was read from Lima, Peru, advising the despatch of a bale of cotton, grown from seed sent out by the association, and stating that the grower has two plantations with above 900,000 plants of Peruvian cotton, and is still extending his operations. He expects shortly to have a large quantity of land sown with exotic seed. Cotton cultivation is receiving increased attention, favourable and profitable results having been obtained, and there is every probability that Peru will in a few years become a large cotton-producing country. Consular reports, forwarded by the Foreign-office, were received from Crete, Rhodes, Bagdad, and Bogota, upon the cultivation of cotton in those districts. In the island of Crete the growth of cotton has hitherto made but little progress. The quantity obtained last year was about one thousand cwts., but no satisfactory estimate can yet be formed of the present year's crop. Complaints are made of the restrictive tendency of Turkish law in regard to foreign colonisation. Looking at the last tracts of rich land now lying waste for want of labour, the general salubrity of the climate, and the admirable geographical position of Crete, it is believed that if the disabilities on the tenure of real property by Europeans were removed, they would soon, by their enterprize and skill, give a fresh impulse to commerce and agriculture, and that the cultivation of cotton would rapidly increase. In the vice-consular district of Candia 3,000 cwts. of clean cotton were grown in 1865, and it is estimated that the crop this year will yield about the same quantity. The production might be increased by a diminution of taxes and duties, and by improved agricultural implements. In the province of Retimo very little cotton is grown and barely sufficient for local use. In the island of Cos about 1,200 cwts. of cotton were grown in 1865, and it is not expected that this year's crop will exceed that quantity. Owing to the oidium which has attacked the vine plantations and nearly destroyed them, the cultivators can scarcely obtain a livelihood, and it is presumed that they would the more readily betake themselves to cotton. The only hindrance is the want of money; and if the

peasants could procure advances on cotton crops, at a reasonable rate of interest, the cultivation of this article would soon become the only occupation of the agricultural population of Cos. The cotton grown in Turkish Arabia is inadequate to the demand for local consumption, the deficiency being supplied by importation from Persia. The quantity produced in Busreh in 1865 was about 6,000 lbs. of clean cotton, and probably as much will be grown this year. In the pashalic of Moossul about 3,500 acres have been planted with cotton during each of the last three years, but the ravages of locusts have been very great, and the cultivators have suffered immensely. If there were no locusts the produce would be about 300,000 maunds of 18lbs. each, or 18,000 bales of 300lbs. each. In the United States of Colombia, between latitude 3 deg. and 5 deg. North, on the banks of the river Magdalena, some experiments have been made with American seed, but they have not been extended, as tobacco and other agricultural products are found to be more remunerative. A small bag of excellent cotton was received from Rio Grande do Sul, grown from Sea Island seed sent out by the association, and it was resolved to comply with an application which has been made for a further quantity of seed. The experiments already made are encouraging growers to go into the cultivation of cotton upon a larger scale, and a considerable extent of land will be planted this sowing season.

Commerce.

POTATO SUGAR.—A bushel of potatoes weighs about 60 lbs., and gives 8 lbs. of pure, fine, dry starch. This amount of starch will make five pints of sugar, of the weight of nearly twelve pounds to the gallon, equal to 7½ lbs. to the bushel of potatoes, or a little less than a pound of sugar to the pound of starch. The sugar is not as sweet as the muscovado sugar, nor is it actually as sweet as its taste would indicate. The sugar may, however, be used for many kinds of domestic purposes. It ferments with great liveliness and spirit when made into beer, yielding a healthful and delicious beverage, and on distillation a fine cider brandy flavoured spirit. It would, however, be most useful in making sweetmeats, and may be used upon the table in lieu of honey, for which it is a good substitute. It has already become a favourite with most people who have become acquainted with it. Its taste is that of a delicious sweet.

ITALIAN PAPER.—Paper is an important article of manufacture in the district of Genoa. In 1865 the export was considerably above the average, having amounted to nearly five million pounds. It is chiefly shipped to Mexico and South America, where the Spaniards use it largely for cigarettes, and it is preferred to machine made paper.

RICE IN MADRAS.—In a recent number of the *Madras Times*, the following account relative to the experimental cultivation of Carolina rice in Madras is given:—The collector of Tinnevely has reported to Government that two Tinnevely measures = 1½ Madras measures of Carolina rice, were sworn on the 20th September, 1865, in the best quality of channel-irrigated land, in the Oorkad estate, which bears the heaviest crops in this district, at present under the Circar management; the land was also manured, but the yield on the 9th February was only one mercial, seven Tinnevely measures, or 10½ Madras measures, giving only seven and a half fold, whereas the indigenous "Anikomban," or ivory rice, yields in the same locality twenty-one fold. This was seed of 1865, saved from the crop of the preceding year. There is no reason alleged for the yield being so inadequate; the crops in the locality have been good. The soil is sandy clay, improved by manure and irrigation, and may perhaps not be adapted to this

species of rice. It is suggested that when exotic grain is forwarded for trial, it would be advantageous if the description of soil on which it arrives at perfection were stated, in order that, if possible, similar soils might be selected. The collector of South Arcot has been requested to forward to the collector of Tinnevely full details of the highly successful experiment lately conducted in the South Arcot sub-division, in order that, if possible, the cause of comparative failure in Tinnevely may be detected. Now that a large supply of Carolina seed rice is expected from the Secretary of State, it is very important that risk of failure in growing it should be guarded against as far as possible. Details of the system of cultivation pursued in America would be very valuable, and probably easily procurable.

BRICK TEA.—The manufacture of brick tea, which is so important to all hill planters in India, has been very successful. Mr. McIver, the manager of the Kousanie Tea Company, Almora, has for several seasons succeeded in preparing it in perfection by means of machinery which he himself devised. The specimens which he exhibited in Lahore, Lucknow, and the London market, met with marked approbation from the most competent judges. It is made of the purest China tea, grown on the Himalayan slopes, well cemented, and hardened into a form like that of an ordinary tiled flooring, but three times thicker. So solid is it that a hatchet is required to cut it, and the tea made from it is quite equal in flavour to the finest mixture produced. More important than this is the success with which these bricks have been introduced into the marts of Central Asia by Cashmere and Afghan traders. The Kumaon planters, with an energy not surpassed by those of Assam and Kangra, lately deputed Mr. Lyall, one of their number, to undertake the overland journey to Russia through Central Asia, so as to develop a trade in Himalayan teas. The bricks are of such a shape and weight that two of them can be slung over a sheep or goat, the usual way of carrying merchandise over the snowy range.

SUGAR IN THE UNITED STATES.—The average monthly consumption of sugar in the United States during the first seven months of the current year appears, from Mr. H. E. Moring's *Circular* for August, to be 31,120 tons, against 28,918 tons in 1865, and 20,352 tons in 1864. The total amount of deliveries for consumption during this period is 217,842 tons this year, against 202,424 tons in 1865, and 142,466 tons in 1864. There is also an increase in the imports for the same period, the quantities being 289,298 tons, 251,236 tons, and 188,324 tons during the first seven months of the years 1866, 1865, 1864, respectively. The stock on the 1st of August in the four principal ports of the United States was 160,912 tons, against 118,934 tons in 1865, 98,395 tons in 1864, and 82,985 tons in 1863.

Publications Issued.

THE RESOURCES, PRODUCTS, AND INDUSTRIAL HISTORY OF BIRMINGHAM AND THE MIDLAND HARDWARE DISTRICT. Edited by S. Timmins. (*Robert Hardwicke.*) That which was done for the industries of the Tyne, Wear, and Tees, on the occasion of the meeting of the British Association at Newcastle-on-Tyne, has now been done for the Industries of Birmingham and the Midland Hardware District, in connection with the meeting of the Association held in that town last year. The work was issued at the Nottingham meeting just concluded, and contains a complete account of the origin, history, progress, and present condition of the various branches of trade or manufacture treated of. The work extends to upwards of 700 pages octavo, is uniform in size with the annually published volume of the Transactions of the Association. Seven of the reports deal with the mineralogical treasures of South Staffordshire—in its coal, iron, and lime; a

valuable report on the iron-trade—locks and lock-making; cast iron—hollow-ware; the Wolverhampton and Walsall trades, and the ceramic manufactures of Staffordshire; the glass trades of the town and district; the manufacture of soap and red lead, lighthouse illumination, the manufacture of alkalis and acids; the ribbons and watches of Coventry; the needles and fish-hooks of Redditch; the Industrial History of Birmingham, by the editor, Mr. S. Timmins—Brass, and brass manufactures; statuary by casting and electro-deposition, mediæval metal working, papier-maché and coffin furniture, stained glass, the gun-trade, buttons, jewellery and the gilt toy trade, saddlery, the old plated and the modern electro-plated trade, the returns of the assay-office of the town, coining, block paper, rope-making, wire-drawing, the pen trade, the manufacture of iron wood, screws, of wrought iron hinges, cut and hand-made nails, of articles in pewter and Britannia-metal, the manufacture of brass and iron bedsteads, of measuring rules, steel pens, tin-plate and wrought-iron hollow ware, enamelled iron articles, castings in ordinary and malleable iron, of hydraulic, sewing, and nail-making machinery, of swords, bells, roasting-jacks, bellows, fire-irons, fenders, of heavy edge-tools, saws, and planes, of various chemical products, artificial manures, colours, varnishes, and lacquers, &c., with a paper on the Social and Economical Aspects of the Town, and another on its Medical Aspects, the whole wound up with a paper on Coffin Furniture Manufacture, concludes a work which, for the first time, shows the varied products and resources of the midland hardware metropolis in their true importance, locally and nationally, and will do much to elevate the labours of that busy town, wherein are practised a greater number of varied trades and manufactures than in any other manufacturing centre in this or any other country. As a contribution to the industrial literature of our land it is a welcome addition. As an addition to the libraries of Mechanics' Institutions, and Working Men's Clubs, not forgetting Free Libraries, it will be valuable, and it will be received by the industrial educationalists on the Continent with a hearty welcome. The thoroughly practical character of the work is its best recommendation. The reports have been written, collected, and compiled by those who are busily engaged in the trade life of the town; they have, therefore, no claim or pretension to literary merit, but every effort has been made in each department of trade, &c., to obtain statistics of production, number of work people, rate of wages, prices of articles, quantity of raw material, &c., consumed.

Notes.

ACCLIMATIZATION.—His Excellency the General Khereddin, son-in-law of the Kasnadar of His Highness the Bey of Tunis, has just sent to the Jardin d'Acclimatation in the Bois de Boulogne, a magnificent present of animals that were brought to Paris by one of his servants. It consists of a fawn of the deer of Barbary, three goats to supply it with milk, six gazelles, a fox, a jackal, and several birds, amongst which may be named—a superb ostrich, a bustard, two wild pigeons, three falcons, trained to fly at hares, two sparrowhawks, trained to fly at quails, an eagle, a yellow vulture, &c. The eagle and the vulture were offered to the Museum of Natural History in the name of His Excellency the General Khereddin. The falcons and sparrowhawks have been placed in the hands of M. Barr, the able falconer of M. Alfred Werlé, of Rheims, who will put them into training, and try their capabilities in the plains of the Camp of Chalons, and compare their acquirements with the birds of his own training. This handsome present of the General Khereddin is a fresh proof of the interest that this high Tunisian dignitary takes in European

matters. His taste for flowers and animals enables him to make a judicious use of his great fortune in spreading a knowledge of useful and remarkable objects. The General Khereddin has recently made a European Garden at Tunis; and M. de Grandmont, who has had an opportunity of seeing it, has, in a recent communication to the Société Impériale d'Acclimatation, stated that the ingenious arrangement of this splendid garden, and the happy mixture of European ornaments and Moorish fountains, could not be too highly praised.

THE FOOD OF PARIS.—The following details will be interesting, not only to the trader and producer, but also to the consumer. It was estimated in 1860 that 13,460,794 kilogrammes of butchers' and pork butchers' meat were sold in the Halles-Centrals of Paris; 13,000,000 salt water and 1,193,000 of freshwater fish; 8,900,000 kilogrammes of butter; 192,000,000 kilogrammes of eggs; and 2,212,000 kilogrammes of cheese; the total corresponding to about the value of 64,000,000 of francs, or £2,560,000 sterling. The sale of fruit, vegetables, and bread amounted to 54,000,000 francs, making a total of 118,000,000 francs, or £4,720,000 sterling. The quantity of bread sold was 7,000,000 kilogrammes; and that of wheat and flour was 1,433,739 quintals.

HORSEFLESH AS FOOD.—The consumption of horseflesh in Paris increases rapidly. It is scarcely two months since the sale of this new kind of food was officially authorised, and already a second special butcher's shop has been opened in Paris (Rue de Flandre, 12) under the surveillance of a veterinary inspector appointed by the Government. At another part an establishment for boiled horse-flesh and soup has been opened in the Quartre St. Antoine (Rue St. Marguerite, 26), and a manufactory of horse-flesh sausages will be opened in the Avenue de Clichy, 101.

AMERICAN FIRE BRIGADE.—One of the most remarkable and meritorious institutions of the city of Baltimore is the Fire Department. Ten years ago, under the volunteer system, which, singular to say, still holds good in some parts of the country, the town was notorious for the frequency of its fires, and the scenes of violence and lawlessness which attended them. The present department consists of six steam fire-engines, drawn by two horses, and worked by thirteen men, each accompanied by a tender, carrying wood, and a drum, drawn by one horse, on which is wound the hose. There are also two hook and ladder companies. The whole annual expense of this establishment is about £13,000. But one of the most potent adjuncts of the department is the fire-alarm telegraph. This is a wire which runs through the city, and is connected with some ninety signal stations. These stations are cast-iron boxes on a post, of which a key is kept at the nearest house. Every policeman is, in addition, provided with one. On opening the box a crank is seen, by turning which a bell is rung at the central station, and the number of the box from whence the alarm is sent is recorded by an "improved Morse Register." The operator immediately communicates the number of the district where the fire has broken out to every engine-house, and four engines, with fires lighted, and men equipped, can be started in two minutes from the time of an alarm being struck. An instance is on record of an engine being at a fire three-quarters of a mile from its house, ready to go to work in six minutes from the time the crank was turned. The following shows the diminution that has taken place in the rates of insurance, per hundred dollars.

	1850.	1860.
	c.	c.
Dry Goods	65	40
Hardware	75	50
First Class Dwellings	30	25
Furniture in Dwellings	50	40
Wholesale Groceries	65	40
Liquors in Casks and Glass	75	50
Warehouses (Storages)	65	40

102 actual fires occurred during 1864, involving a loss of 169,566 dollars, on which there were insurances amounting to 142,954 dollars. The four principal fires, with a loss of 54,209 dollars, were respectively three coal oil factories and an Italian brig in the harbour laden with that article. Many of the minor fires also occurred from the use of this article in lamps. It appears to be the practice to adulterate coal-oil with benzine, which at a temperature of 80 degrees turns into gas, bursting the lamp, and igniting the inflammable substance. While pure oil costs one dollar the gallon, the adulterated oil can be sold at 70 cents. Purchasers can easily test the oil by pouring a small quantity into a saucer, and applying a lighted match to it. If pure, it will be found very difficult to ignite, but if adulterated it will very readily catch fire, and should be rejected.

THE SILKWORM DISEASE.—M. Pasteur recently communicated to the Academy of Sciences, his researches on the disease of the silkworm, undertaken by him at the request of the Minister of Agriculture and Commerce. His first care was to examine the peculiar black spots which seem to be characteristic of the disease, and which have been called vibrating corpuscles; and he arrives at the conclusion that although the corpuscle is undoubtedly a symptom of the disease, the silkworm may be in an unhealthy state without it. There may be no corpuscles in the seed, none in the worm when just hatched, nor in the chrysalis, and yet the butterfly may be affected with them; and in that case we may safely conclude that it has caught the disease during the rearing, and that it is not hereditary. It is quite certain that healthy seed can not proceed from non-corpusculous butterflies. But all seed proceeding from corpusculous parents is not necessarily bad in a commercial point of view, for it may yield a remunerating quantity of silk, though it would not do for breeding. Nay, even a diseased seed may produce butterflies in a perfectly healthy state; this result, M. Pasteur believes, may be attained by observing great cleanliness, and carefully removing the carcasses of the dead worms. In order to see whether a lot of cocoons are likely to give good seed, M. Pasteur takes away a few twigs, containing in all about 100 cocoons, and puts them into a room apart, kept at a temperature of a few degrees more than that of the whole lot. In this way the butterflies get out sooner, and may be examined under the microscope. If these are not corpusculous, then the lot may be relied on for breeding purposes; if they are, it should be taken to the spinning factory for the sale of the silk. Corpuscles abound in the dust of the rooms where diseased silkworms have been reared, and if the mulberry leaves which are given to the worms be sprinkled with this dust a great mortality will ensue. And yet the worm that die of this food have no corpuscles. In fine, Ms Pasteur is of opinion that the disease has always existed, and that it is now only in a state of great development owing probably to great mismanagement.

THE NEW RAILWAY SECURITIES ACT.—The Act to amend the law relating to securities issued by railway companies has been printed. Every railway company, on or before the 15th January next, is to register, and to keep registered at the office of the Joint Stock Companies in England, the name of their secretary, accountant, treasurer, or chief cashier for the time being authorised by them to sign instruments under this Act. The half-years for the purposes of the Act to be the 30th June and 31st December, and the first half-year next December, but the Board of Trade on application may appoint other days. Within 14 days after the end of each half-year every railway company is to make an account of their loan capital authorised to be raised, and actually raised, up to the end of the half-year, specifying the particulars described in the schedule. The Board of Trade may prescribe the form in which the half-yearly accounts are to be made, and such accounts are to be opened to the inspection of shareholders, &c., without payment. Within 21 days of the end of each half-year every rail-

way company is to deposit with the Registrar of Joint-Stock Companies in England a copy, certified and signed by the company's registered officer as a true copy, of their loan capital half-yearly account. Railway companies are prevented from borrowing until the accounts stated are rendered, and on a company failing to register or deposit the half-yearly account, a penalty not exceeding £20 is to be imposed, and £5 for every day during which the same continues after the day on which the first penalty is incurred. Any person may inspect the documents on the payment of 1s., and have extracts furnished. There are penalties set forth for false declaration. On conviction of a director or officer by indictment there may be a fine or imprisonment, but on a summary conviction, a penalty.

PARIS IMPROVEMENT.—The day of the Imperial *fêtes*, the 15th of August, was marked this year by the temporary opening of one of the most remarkable improvements which has yet been made in Paris, the grand esplanade to be known in future as the Place du Roi de Rome. The hill known as the Trocadero, on which Napoleon I. proposed to erect a palace for his son, the King of Rome, stood on the road between Paris and Passy, on the opposite side of the Seine to the Champ de Mars; in less than six months this hill has been converted into a sloping esplanade, a work which necessitated the excavation and conveying to a considerable distance more than half a million cubic yards of stony soil. The greater portion of the *débris* was carried by rail over the river by the Pont de Jena, and served to raise the level of the ground of the Champ de Mars, to prepare it for the Great Exhibition of next year, the rest was employed for the earth-work of the railway which is now being formed to complete the circular line around Paris. The work was commenced on the 28th of January, and finished, as regards the first portion, on the 7th of July, and before the 15th of August the whole of the stuff excavated was carried away, the railway over the river removed, and the bridge replaced in its ordinary condition. The works have, however, recommenced, it having been determined to double the extent of the new esplanade; the excavations now to be undertaken are nearly of the same extent as those finished, but with this essential difference, that the *débris* will not have to be conveyed off the ground, or only to a very short distance. The new esplanade, when completed, will be nearly circular, and more than eight hundred feet in diameter. Great changes are being made in the old village of Chaillot, famous for its convents, and the earth excavated will be employed to fill up the old catacombs, which still exist there. The esplanade, or *place*, will be open towards the river, and one section of it will be on an incline, and capable of accommodating, it is said, half a million of people to view the Exhibition and its surrounding park next year, and, in after years, to witness the military and other *fêtes* which take place in the Champ de Mars or the river. The slope, which will be covered with grass, will have an incline, varying from .03 to .62 in the 1,000 feet, and across it will be a grand avenue, in the line of the axis of the bridge opposite, 130 feet wide, and disposed partly in steps, two inches high, of which there will be 142, relieved at intervals by landing-places; around the esplanade will be a grand avenue or boulevard, and at the back part a series of villas, and it will be approached by nine roads or boulevards, which will place it in direct communication with the top of the Champs Elysées, the outer boulevards of the city, as well as with Passy and the Bois de Boulogne, and it will command a view of the neighbouring heights of St. Cloud and Meudon.

FEMALE PROFESSIONAL EDUCATION IN FRANCE.—A society for providing professional education for young women founded, about three years ago, two schools in Paris, and the annual distribution of prizes has just taken place. The grand object is to instruct the pupils in some useful occupation without submitting them to the dangers and inconveniences of the workshop, factory, or studio. The course of study includes the French

language, history, geography, arithmetic, accounts, and industrial design, and ateliers for needlework, tailoring, engraving on wood, and painting on porcelain form part of the establishment. The fees are extremely moderate. During the past twelve months 280 pupils attended the two schools, and several who had finished their education have been well placed with the assistance of the lady patronesses of the society. The prizes consist partly in accounts opened at the *caisse d'épargne*, or savings bank, in favour of the successful competitors. Singing is also taught in the school as a recreation, and the distribution of the prizes was enlivened by the performance of several choruses by the pupils. The establishment of these schools is due principally, we believe, to M. Jules Simon and other social economists, whose ladies take an active part in their management.

ARTESIAN WELLS IN ALGERIA.—The *Moniteur de l'Algérie* of the 3rd inst., states that great success is attending the sinking of Artesian wells in the Great Desert. Boring works were established at El-Gohard, in Hodua, in the circle of Boussâda, on the 30th of May last, under the direction of M. Jus, the engineer. Water was found at a depth of 9 metres 70 centimetres, which rose to a level of 5 metres below the surface of the soil; at a depth of 90 metres, another sheet of rising water was found; and at 104 metres the borer fell in with another sheet of rising water, affording a supply of 30 litres per minute; and the works having been continued to 137 metres, another sheet of water was tapped, giving a supply of 110 litres per minute. Great results are expected from the establishment of these wells, and a hope is expressed that by their means a time will come when the desert will be transformed into a rich and fertile country.

SARDINE FISHERY.—The sardine fishery this year has been very successful and profitable. At Douannenez and at Concarneau, which are the principal centres of this fishery, 884 boats have been employed. More than 110 millions of sardines have been caught by them during the month of July. The sale produced 707,648 francs. At the end of August the abundance of sardines was such that they were sold at as low a price as two francs per thousand, a thing that has not been known for ten years.

BET IN AMERICA.—The *Grocer*, quoting from a recent number of the *Scientific American*, states that a joint-stock company at Chatsworth, Illinois, have 600 acres of beet growing this year. They estimate the crop at ten tons to the acre, and the yield full 1,000,000lbs. of sugar. The machinery of the company, which is all new, was brought from Germany. The company will commence operations about the 1st of October. If this enterprise proves a success—of which there is not much doubt—the business will be sure to spread with rapidity through that state and the north-west.

Patents.

From Commissioners of Patents' Journal, August 31st.

GRANTS OF PROVISIONAL PROTECTION.

Aeriform and other fluids, raising—1997—G. Campbell.
Artificial teeth—1662—T. Godfrey.
Boot-making, implement for—1995—J. H. Johnson.
Boot-making machinery—1964—T. Greenwood and W. Keats.
Cements, concretes, and artificial stone—1970—J. J. Bodmer.
Chlorine-manufacture—1948—W. Weldon.
Collars and wristbands—1954—G. Speight.
Cords, chains, &c., apparatus for holding and releasing—1979—W. Beaumont and W. McMaster.
Corn rick stand and waterproof cover—1991—J. B. Ham.
Digging implement—1974—W. E. Gedge.
Direction labels, damping—2045—W. Hoare.
Dove-tail joints, cutting—2001—S. T. Armstrong.
Dried fruit, removing seeds from—2033—W. R. Lake.
Explosive compound mixture—1940—H. A. Bonneville.
Fibrous materials, spinning and doubling—2037—J. Sibley.
File-cutting—1596—P. H. Limet.
Fire-arms, breech-loading—1960—W. Richards.
Fire-arms, breech-loading, and cartridges—1976—W. Stokes and C. Faulkner.
Fire-escapes—2021—E. Lamb.

Gaseous water, application of to medicine, &c.—1966—A. Paraf.
Gas and water pipes, connections for—2028—R. Medical and W. Nicholls.
Gas, artificial materials for producing—2025—J. Hamilton.
Gas-manufacture—1162—A. Upward and A. A. Cochrane.
Giffard injector—1982—J. Roblason.
Hay, corn, &c., ventilating ricks of—2020—E. Lywood.
Human body, apparatus for irrigating parts of—1950—A. V. Mathieu.
Iron-manufacture—1823—J. N. Fournel.
Jars and bottles, securing stoppers of—2067—J. H. Johnson.
Lard, cooling, purifying, and bleaching—2003—N. Kilvert.
Locomotive engine wheels, increasing adhesion to their rails—2015—A. Vescovali.
Mother-of-pearl, imitating—1972—W. E. Gedge.
Motive-power engine—1946—T. Adams.
Nitrogen, substitution of for hydrogen in certain bodies—1956—P. Greiss and H. Caro.
Ores, coal, &c.—1968—J. A. Birkbeck.
Paper pulp, manufacture of from wood, &c.—1980—J. Sawyer and F. Bauman.
Paper-staining—2005—T. Campbell and H. Coffey.
Precipitation and deoxidation—1978—A. Paraf.
Railways, locking switches of—1952—W. Stroudley.
Rein clip or holder—1942—W. Toms.
Rotary engines—1958—W. Clark.
Safes and strong-rooms—1993—I. E. Chilcott.
Sal-ammoniac, producing in a commercial form—2043—P. Spence.
Sewing machines—2017—J. Dimock.
Smelting furnaces, hot blast for—1962—J. Pickering.
Spindles, foot-bearings for—2027—W. R. Lake.
Telegraph wires, insulating—1989—W. A. Marshall.
Torpedoes—2035—C. A. McEvoy.
Umbrellas and parasols—2039—H. Holland.
Winding apparatus—2013—J. Boyd.
Window-blinds, &c., apparatus for lowering and raising—1944—J. W. Hoffman and G. R. Wilson.
Woolen cloths, fulling—2031—W. Bottomley.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

Fibrous substances, bleaching—2156—G. Haseltine.
Looms—2186—C. Richardson.
Saw for forest use—2170—W. E. Gedge.

PATENTS SEALED.

595. W. P. Le Keux and F. A. Wishart.	683. J. Norman.
643. R. Walker.	694. G. Price.
665. H. Hackett.	696. A. C. Baldwin.
668. W. H. Berry.	715. V. Duterne.
669. T. Clayton.	796. F. C. Bakewell.
678. E. Rimmel.	922. J. Davis.

From Commissioners of Patents' Journal, September 4th.

PATENTS SEALED.

676. J. Broadbent.	730. T. Wallwork.
686. A. Barker.	731. C. J. Richardson.
692. W. and S. Machin.	768. L. Kaberry.
693. G. Randle.	808. J. Campbell, S. McKinstry, and T. Wilson.
698. W. Thomson.	827. W. E. Newton.
700. T. Pridaux.	874. A. V. Newton.
703. G. E. Donisthorpe.	1658. T. Gray.
704. S. F. Schoonmaker.	1062. T. Gray.
713. W. H. Fletcher.	1164. W. Clark.
719. E. T. Hughes.	1375. T. Holt.
720. E. T. Hughes.	1619. J. B. Payne.
721. E. Forster.	1779. A. V. Newton.
723. H. T. Humphreys.	

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

2161. J. H. Banks.	2176. W. Boulton and J. Worthington.
2115. T. Bourne.	283. E. Beanes.
2138. D. Spiers, A. Boyd, and J. Kirkwood.	2192. J. Rowell.
2180. H. A. Bonneville.	2156. J. Snider, jun.
2139. A. Agnew.	2271. E. Alcan.
2158. G. Russell.	

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

1970. J. H. Johnson.	1993. J. A. Simpson.
2001. W. Brown and S. Bathgate.	2245. M. Gerstenhofer.

Registered Designs.

Metallic pen—Aug. 18—4804—C. Brandsauer, Birmingham.
Portable combined holder for scent and other materials—Aug. 21—4805—P. and F. Schofer, 27, Piccadilly.
Apparatus for watering gardens and other like purposes—Aug. 22—4806—C. A. Eade, Birmingham.
The bell cruet—Aug. 24—4807—F. E. Timm and Co., Regent-place, Regent-street, Sheffield.
Floor skate—Sept. 4—4808—E. Woodward, Spon-lane, West Bromwich.