

THE SCHOOL OF PHARMACY

OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

Emeritus Professor :—Theophilus Redwood, Ph.D., F.I.C., F.C.S.

BOTANY and MATERIA MEDICA Professor Bentley, M.R.C.S., F.L.S.

CHEMISTRY and PHYSICS Professor Wyndham Dunstan, F.C.S.

PRACTICAL CHEMISTRY... .. Professor Attfield, Ph.D., F.R.S., F.I.C., F.C.S.

PHARMACY and PRACTICAL PHARMACY ... Mr. Joseph Ince, F.L.S.

FORTY-FIFTH SESSION, 1886-7.

THE SESSION commences on Friday, OCTOBER 1, at 9 A.M., and extends to the end of JULY. Students can enter at any time, but they are strongly recommended to join the classes either on October 1, when the FIRST COURSE of Lectures begins, or on March 1, when the SECOND COURSE of Lectures commences.

The DISTRIBUTION of the SCHOOL PRIZES will take place on Wednesday, October 6, at 8 p.m. An Address to the Students will be delivered by Sir Henry W. Acland, K.C.B., M.D., F.R.S., Regius Professor of Medicine in the University of Oxford, and President of the General Medical Council. All Students and friends, ladies as well as gentlemen, are invited to be present.

BOTANY AND MATERIA MEDICA.

Professor BENTLEY, M.R.C.S.ENG., F.L.S.

These Lectures are delivered on Thursday, Friday, and Saturday mornings, at Nine o'clock.

FEES.									
FEES.	{	Botany and Materia Medica, one Course (five months)	£2	2	0				
	{	An entire Session (two Courses), including Classification of Plants and Practical Botany	3	3	0				
	{	Classification of Plants and Practical Botany, separately	1	1	0				
	{	Perpetual Admission to all the Courses	4	4	0				

CHEMISTRY AND PHYSICS.

Professor WYNDHAM DUNSTAN, F.C.S.

These Lectures are delivered on Monday, Tuesday, and Wednesday mornings at 9 o'clock.

FEES.									
FEES.	{	One Course	£3	3	0				
	{	An entire Session—Two Courses	4	4	0				
	{	Perpetual Admission... ..	5	5	0				

PRACTICAL CHEMISTRY.

Professor ATTFIELD, Ph.D., F.R.S., F.I.C., F.C.S.

Demonstrator—Mr. F. W. SHORT. Assistant-Demonstrator—Mr. E. J. EATERS.

Laboratories for practical instruction in Chemistry as applied to Pharmacy, Manufactures, Analysis, and Original Research, commencing on Friday, October 1, at 10 a.m. The Laboratories are open from 10 o'clock in the morning until 5 in the afternoon daily, except on Saturdays, when they are closed at 2 o'clock. Entries can be made for any period at any time.

FEES.	HOURS OF STUDY	HOURS OF STUDY															
		ONE MONTH	TWO MONTHS	THREE MONTHS	FIVE MONTHS	TEN MONTHS											
FEES.	{	10.0 to 5.0 daily (Sat. 10.0 to 2.0)	£4	4	0	7	7	0	10	10	0	15	15	0	23	5	0
	{	10.0 to 5.0 on any three days weekly	2	17	6	4	17	6	6	16	6	10	10	0	17	17	0
	{	10.0 to 5.0 on any two days weekly	2	2	0	3	10	0	4	17	6	7	7	0	12	12	0
	{	Any three hours daily	2	17	6	4	17	6	6	16	6	10	10	0	17	17	0
	{	Any two hours daily	2	2	0	3	10	0	4	17	6	7	7	0	12	12	0

PHARMACY AND PRACTICAL PHARMACY.

Mr. Joseph Ince, F.L.S., will deliver two courses of lectures on Pharmacy, and superintend two series of demonstrations in Practical Pharmacy; including instruction in the reading of prescriptions and practical dispensing, as well as the recognition of the galenic preparations of the Pharmacopœia and the knowledge of their composition. The lectures will be given on Thursdays at 5 p.m., and the demonstrations on Tuesdays and Fridays at 5 p.m.

FEES.									
FEES.	{	One Course	£2	2	0				
	{	An entire Session—Two Courses	3	3	0				

A NEW PROSPECTUS OF THE SCHOOL IS NOW READY.

Application for Admission to the School, for Prospectuses, or for further information may be made to the Professors or to their Assistants, in the Lecture Theatre or Laboratories, 17 Bloomsbury Square, London, W.C.

“**CONCILIO ET LABORE.**”

THE MANCHESTER COLLEGE

OF

PHARMACY,

225 & 227a Oxford St., Manchester.

ESTABLISHED 1877.

MANCHESTER, 1882.

Director, Mr. W. SPENCER TURNER,
PHARMACEUTICAL CHEMIST, &c., &c.

THE School premises include Class-rooms, Laboratories, Dispensary, and Museum; no care or expense being spared to maintain the high character of the School, not only by passing a fair proportion of men, but also in giving thorough, sound, and practical knowledge of the science and art of Pharmacy in all its branches.

The Sessions of this School begin on September 1st and January 4th and 5th in each year. They include the undernamed distinct Courses of Classes, each working independently and every class and every student receiving full attention. All the advanced classes are divided, Mr. Turner and Mr. Clayton taking each half alternately.

MINOR—Full Time, Afternoon, Once a Week, and Evening Classes.

MAJOR—Full Time and Extra Classes.

PRELIMINARY—Mr. E. G. Taylor's Class.

PASS LIST

FOR THE YEAR BETWEEN OCTOBER 1885 AND JULY 1886.

MINOR.

Mr. T. C. PASK, Hoylake.	Mr. BANKS SWINBURN, Penrith.	Mr. JAS. GARNETT, Kendall.
„ J. SCARR, Todmorden.	„ R. H. FEATHERSTONE, Ac- crinton.	„ W. A. COCKSHOT, Manchester.
„ J. H. TITMAS, Manchester.	„ JAS. REDHEAD, Manchester.	„ T. E. DAWSON, Gateshead.
„ C. TURNER, Hingham.	„ J. G. GOURLAY, Manchester.	„ E. FORBES, Bolton.
„ T. A. WILD, Hyde.	„ J. DALE, Sheffield.	„ W. GREAVES, Ironville.
„ JAS. LIVESLEY, New Mills.	„ E. CATTON, Burnley.	„ R. PICKERING, Blackburn.
„ J. A. MOORE, Bradford.	„ W. TOWNSEND, Bradford.	„ E. THOMAS, Garstang.
„ JAS. NAYLOR, Brownedge.	„ F. H. ROGERS, London.	„ J. E. WILKINSON, Manchester.
„ WM. STANDING, Darwen.		

MAJOR.

Mr. WM. PEARSON, Sinderland Green.	Mr. C. TURNER, Hingham.
„ GEO. CLAYTON, Manchester.	„ A. E. BLACKBURN, Eccles.

PRELIMINARY.

Mr. G. F. BOWMAN.	Mr. T. H. HALL.	Mr. J. DRINKWATER.
Mrs. SHAW.	„ J. STELFOX.	„ J. P. EVANS.
	„ W. PENNINGTON.	„ JOS. BROOKS.

WESTMINSTER COLLEGE OF CHEMISTRY.

FEES.

One Term (Six Weeks), Minor or Major... ..	£8 6 0
Complete Course (14 Weeks), Minor or Major	9 9 0
12 Months' Course, Minor and Major	15 15 0
PRELIMINARY—One Month, £2 2s.; Three Months	5 5 0

Students may enter at any time, and are advised to send in their names, so that benches may be reserved for them.

The large increase in number of Students at this College is due chiefly to the recommendation of former students. At each Examination during the past Session great success attended the Students of this College, as can be seen by reference to the published pass lists in "The Chemist and Druggist" and "Pharmaceutical Journal," and intending candidates may be sure that, by diligence, attention to studies, and careful perusal of notes given at the Lectures, they will be efficiently prepared to pass their examinations with credit.

PASS LIST FOR THE SESSION 1885-86.

October.	December.	February.	April.	July.
MINOR.	MINOR.	MINOR.	MINOR.	MINOR.
Mr. C. M. Brown	Mr. J. W. Branston	Mr. H. Beaton	Mr. H. C. Carrel	Mr. W. S. Binkhoru
" C. J. G. Bunker	" G. P. Buckley	" C. Brown	" C. E. Dodsley	" F. W. Bradley
" R. Colwill	" R. J. Clements	" T. Coope	" F. J. Dunstan	" A. Cartwright
" S. Cooke	" H. S. Cox	" J. Dormau	" C. Ellisson	" P. Dakers
" J. Cookson	" C. W. Crasweller	" R. B. Greaves	" W. J. Fairbanks	" E. L. Delarue
" H. Copestake	" S. Jones	" M. Hargrave	" G. Faraday	" A. Elliott
" C. D. Cumber	" J. H. King	" H. R. H. Haycroft	" T. C. Fawcitt	" R. D. Evans
" S. Day	" S. C. McKee	" P. Morrell	" F. C. Fawn	" G. R. Fisher
" J. Ferguson	" W. H. Otty	" J. Munday	" A. E. Fox	" J. H. Francis
" H. S. Green	" F. W. Purchase	" W. Parkinson	" A. J. Foxon	" R. R. Gaut
" T. Hartley	" A. C. Stark	" J. Sankey	" T. Goodman	" R. T. Garton
" W. H. Jennings	" T. Thomas	" H. R. Smith	" T. J. Green	" W. Gasson
" B. O. Jones		" J. Stothert	" E. O. Hambrook	" F. Guttridge
" A. Milne			" T. G. Heighington	" H. O. Isaac
" J. Morris			" J. Hemmons	" A. W. Kimber
" H. S. Pearmund	MAJOR.	MAJOR.	" W. H. D. Horrell	" J. F. Leech
" G. H. Phillips	Two presented. Both	Mr. A. L. Meadley	" W. Howe	" W. Martin
" R. Roberts	passed.		" E. Jones	" W. E. Moffet
" W. Roberts			" T. Lewis	" J. R. Oliver
" C. H. Robinson			" F. J. Loveday	" R. Robson
" S. Wilson			" V. Norman	" F. J. Sansom
" W. E. Youngman			" P. F. Rowsell	" W. J. Shepperd
			" J. Senior	" W. H. Softley
MAJOR.			" E. Smith	" W. M. Waterhouse
Mr. J. Healy			" W. Spyvee	" A. W. Wood
" A. D. Markham			" W. G. Walker	" J. P. Wright
" J. R. Sturdy			" W. L. White	
			" A. J. Wing	
			" S. Wyatt	
PRELIMINARY.			MAJOR.	MAJOR.
Mr. J. H. Carré			Mr. G. Jacques	Mr. G. H. Cuff
" G. Oxley			" H. S. Pearmund	" R. Pinder
	PRELIMINARY.		" A. Twivey	
	January.		PRELIMINARY.	PRELIMINARY.
	Mr. W. S. Beale		Mr. S. P. Jacques	Mr. H. W. Brown
	" J. Brookes		" A. H. McConnell	" R. P. Page
	" W. C. Blayney		" R. Seldon	" M. A. L. Tothill
	" F. G. Clapham		" J. H. Smith	" S. H. Tottle
	" W. C. Pitt			
	" S. J. Lewis			
	" E. P. Minnett			
	" B. J. Workman			

For Prospectus and other information, apply to

Messrs. WILLS & WOOTTON, Trinity Sq., Borough, London, S.E.

"SYSTEMA OMNIA VINCIT."

SOUTH LONDON SCHOOL of PHARMACY,

325 KENNINGTON ROAD, S.E.

Director: Dr. JOHN MUTER, M.A., F.R.S., F.C.S., &c.

ESTABLISHED 1ST OCTOBER, 1868.

NINETEENTH SESSION, 1886 7,
Commenced on the 15th September, 1886.

For Fees, &c., apply to W. BAXTER, Secretary.

EDINBURGH PHARMACEUTICAL CLASSES.

DAY AND EVENING CLASSES for Pharmaceutical Students in Chemistry, Materia Medica, and Botany, are conducted in the Class Rooms and Laboratories, 41 Chambers Street, Edinburgh, by DR. DRINKWATER, F.C.S., Cl. Lecturer Ed. Sch. Med., assisted by MR. J. G. ROSS, B.Sc., F.C.S., and others. Instruction also by correspondence.

Apply to DR. DRINKWATER.

INSTITUTE OF CHEMICAL TECHNOLOGY AND ANALYTICAL LABORATORY,

5, 8, 9, & 11 HACKINS HEY, LIVERPOOL.

Conducted by A. NORMAN TATE, F.I.C.

Students can enter at any time, there being no special terms kept. Each Student is required to work through a lengthy preparatory course of Practical Chemistry, and also study Theoretical Chemistry, Physics, and other subjects, a knowledge of which is required in making Chemistry practically useful in technical pursuits. After concluding this course, he can work at special subjects of Chemical Technology. For further particulars apply to MR. NORMAN TATE, 9 Hackins Hey, Liverpool.

THE MASON COLLEGE, BIRMINGHAM.

SESSION 1886-87.

FACULTIES OF ARTS AND SCIENCE.

The Session will commence on FRIDAY, OCT. 1, 1886.

Syllabuses, containing full information as to Entrance and other Scholarships, the various courses of Instruction, Lecture Hours, Fees, &c., may be obtained from Messrs. CORNISH, New Street, Birmingham; price 3d., by post 4½d.

GEO. H. MORLEY, Secretary.

THE LIVERPOOL SCHOOL OF PHARMACY, 36 OXFORD ST., LIVERPOOL.

Principal—Mr. J. S. WARD, M.P.S., Ph.Ch., Prize Medallist and South Kensington Prizeman.

Assisted by Messrs. J. T. HORNBLLOWER and H. WYATT for the Minor Pupils, and by Mr. PENDLEBURY for the Preliminary Pupils.

The NEW SESSION commenced on the 1st inst., and the following Classes are now in full work:—

(1) MAJOR.

Four hours' practical work, and two hours' class daily. Fees—3 months, £7 10s.; 6 months, £12 12s.

(2) MINOR.

(a) DAY CLASSES. Four hours' class and two hours' practical work daily. Fees—1 month, £3; 3 months, £7 10s.; 6 months, £12 12s.

(b) AFTERNOON CLASSES on Tuesdays, Thursdays, and Fridays, from 3 to 5 o'clock. Fees—1 month, £1; 6 months, £4 10s.; 12 months, £7 10s.

(c) EVENING CLASSES on Mondays, Wednesdays, and Fridays, from 8 to 10 o'clock. Fees—1 month, £1; 6 months, £4 10s.; 12 months, £7 10s.

All the Classes for "Minor men" are double, i.e., those who are presenting themselves at the same examination are separated from the rest, and specially prepared together.

(3) PRELIMINARY.

(a) AFTERNOON CLASSES on Tuesdays and Thursdays from 3 to 5 o'clock.

(b) EVENING CLASSES on Mondays and Fridays from 8 to 10 o'clock.

Fee for either course, £2 2s. per quarter.

At the July Examinations—7 Minor, 1 Major, and 2 Preliminary pupils presented themselves—the following passed—

* Mr. G. R. LAWRENCE, Boston—MAJOR

* " R. FOULDS, Liverpool

" J. HOPE, Wilton

" J. WIGTON, Chesterfield

* " J. J. B. WOODS, Tunstall

* " J. R. BLABEY, Woolton—PRELIMINARY

* Passed at their first attempt.

Indoor Pupils received; terms, £1 per week.

Students can enter at any date—those desiring to join at a future period, say January next, receive instructions by post how to proceed in the meantime gratis, upon payment of part of the class fee as a guarantee of good faith.

Syllabus, with full particulars of the School, sent free on application.

SIXTEENTH EDITION.

MATERIA MEDICA EXAMINATIONS.

BRITISH PHARMACOPŒIA.

The ORIGINAL COLLECTION of SPECIMENS of the ORGANIC MATERIA MEDICA of the British Pharmacopœia, for the use of
MEDICAL AND PHARMACEUTICAL STUDENTS.

Further enlarged by additions to the B.P., 1885, &c.

Price of the Collection, in a neat Wooden Box, £1 10s. and £2 net.

The Specimens in the more expensive set are packed separately in boxes, each being numbered, and a Key is supplied for explanation. *The Copyright of these Collections is Registered.***SUPPLEMENTARY SETS OF 12 SPECIMENS**, to bring up to date the cases of the Fifteenth Edition, 3s. each.

New Edition of "THE ORGANIC MATERIA MEDICA," thoroughly Revised and greatly Enlarged by the late W. SOUTHALL, F.L.S., Price 5s.

Catalogues of these and of various sets of Chemical Apparatus and Reagents, also of a Herbarium of Dried Medicinal Plants, free on application.

SOUTHALL BROS. & BARCLAY, MANUFACTURING CHEMISTS, BIRMINGHAM.**R**oyal College of Science for
IRELAND, STEPHEN'S GREEN, DUBLIN.

SESSION 1886-87.

This College supplies a complete Course of Instruction in Science, as applied to the Industrial Arts, especially those which may be classed broadly under the heads of CHEMICAL MANUFACTURES, MINING, and ENGINEERING.

A Diploma of Associate of the College is granted at the end of the Three Years' Course.

There are Four Royal Scholarships, tenable for two years, each of the value of £50 yearly, with free education, including Laboratory Instruction. Two become vacant each year. They are competed for by Associate Students at the end of the First Year's Course.

The Fees are £2 for each Course, or £10 for all the Courses of each year, with the exception of Laboratory Practice and Drawing School.

Chemistry (Theoretical and Practical), Metallurgy, &c.	Professor HARTLEY, F.R.S., F.C.S., F.R.S.E.
Mathematics, Mechanics, and Mechanism	Professor HENNESSY, F.R.S., M.R.I.A.
Descriptive Geometry, Drawing, Engineering, and Surveying ..	Professor PIGOT, C.E., M.R.I.A.
Experimental Physics (Theoretical and Practical)	Professor BARNETT, F.R.S.E., M.R.I.A., Dean of Faculty.
Mining and Mineralogy	Professor O'HEILLY, C.E., M.R.I.A.
Botany	Professor M'NAB, M.D., F.L.S.
Zoology	Professor HADDON, M.A., F.Z.S., M.R.I.A.
Biology	Professors M'NAB and HADDON.
Geology and Palæontology	Professor HULL, M.A., LL.D., F.R.S.
Palæontological Demonstrations..	Mr. BAILY, F.L.S., F.G.S., M.R.I.A.

The Chemical and Physical Laboratories and Drawing School are open daily for Practical Instruction.

Fee for Chemical Laboratory, £2 for One Month, £5 for Three Months, £9 for Six Months, or £12 for Session. Fee for Physical Laboratory, £1 per Month of one hour per day, or £6 for the Session. For six hours per day, £3 per Month.

Fee for Biological Laboratory, £2 for the Term. Fee for Drawing School, £3 for Session, or £2 for one term.

The SESSION COMMENCES on MONDAY, OCTOBER 4th.

Programme may be obtained on application at the College, or by letter addressed to the Secretary, Royal College of Science, Stephen's Green, Dublin.
Professor J. P. O'REILLY, Secretary.**CHARING CROSS HOSPITAL MEDICAL SCHOOL.**—
WINTER SESSION, 1886-87.

The SESSION will COMMENCE on FRIDAY, October 1st.

The Hospital has a service of 230 Beds for Clinical Teaching, including those of the adjoining Royal Westminster Ophthalmic Hospital, to which General Students are free.

TWO ENTRANCE SCHOLARSHIPS, of the value of £30 and £20 respectively, are awarded annually in October, for which Candidates are required to give notice of their intention to compete on or before Monday, September 20th.

FEES.—For the Curriculum of Study required by the various Examining Bodies and Hospital Practice, Ninety Guineas, in one sum, or 100 Guineas, in five instalments. The Composition Fee for Dental Surgery is £42 2s., payable in two instalments.

The hours of Lectures have been specially re-arranged to suit the convenience of Dental Students. Charing Cross Hospital is within three minutes' walk of the Dental Hospital of London.

PRELIMINARY SCIENCE INSTRUCTION.—Arrangements have been made for Students desirous of undergoing a Course of Instruction in Science, such as that required for the Preliminary Scientific (M.B.) Examination of the University of London, to attend at the Normal School of Science, South Kensington.

A Prospectus, containing much additional information, will be forwarded on application to the Secretary, who attends daily at the Office of the School, Chandos Street, Charing Cross, between the hours of Ten and Four.
J. MITCHELL BRUCE, M.A., M.D., Dean.**LONDON HOMŒOPATHIC HOSPITAL**

AND

MEDICAL SCHOOL,**GREAT ORMOND ST., BLOOMSBURY.****WINTER SESSION, 1886-87.**The WINTER SESSION will commence on Tuesday, October 5th, at 5 P.M., when the annual *Hahnemannian Oration* will be delivered by Dr. J. Galley Blackley, after which the Lectures and Hospital Practice in the Wards and Out-Patients' Department will be resumed.

A valuable opportunity is thus afforded of acquiring a knowledge of homœopathic medicine.

Full particulars may be obtained from the Honorary Secretary of the Medical School, Dr. J. Galley Blackley, who will attend at the Hospital on Mondays and Thursdays, from 2.30 to 4.30 P.M., for the purpose of giving information to intending Students.

By order,

Sept., 1886.

G. A. CROSS,

Secretary.

STUDENTS' AIDS TO EXAMINATION.**PRELIMINARY.**—Arithmetic and Metric System, 1s. How to Write an Essay, 6d. Latin Grammar and Cæsar Simplified, 1s. Minor—Equations Simplified, 1s. Illegible Autographic Prescriptions, 1s. Minor Questions, gratis. Notes on Dispensing, 1s. Prescriptions given at the Minor, 1s. For "How to Prepare for either Exam.," enclose stamped envelope, "Chemist," care of Mr. J. EDWARDS, Wye, Kent.**TULLY'S POSTAL TEACHING,**

For the Minor, Modified, and Preliminary,

WAS established in 1872, and notwithstanding many imitations, continues to hold its prestige as the best and most successful method ever offered to Students for obtaining that thorough knowledge necessary to qualify for Examination, without leaving home. Every Student desirous to ensure success should study under this system. Fees: Minor or Modified, One Guinea; Preliminary, 10s. 6d. Send for particulars to**Mr. J. TULLY (Hills Prizeman),**
185 St. George's Road, West Hill, Hastings.

UNIVERSITY OF GLASGOW

SESSION 1886-87.

THE MEDICAL SESSION will be opened with an Introductory Discourse by Professor MACLEOD, M.D., on TUESDAY, the 26th OCTOBER, 1886.

WINTER COURSES.

Zoology, 9 a.m.—Professor Young, M.D.

Clinical Medicine, 9 a.m.—Professor McCall Anderson, M.D., and Professor Gairdner, M.D., LL.D.

Clinical Surgery, 9 a.m.—Professor George Buchanan, M.D., and Professor Macleod, M.D.

Chemistry, 10 a.m.; and Chemical Laboratory, 10 a.m. to 4 p.m.—Professor Ferguson, M.A.

Anatomy: Senior, 11 a.m.; Junior, 2 p.m.; and Practical Anatomy, 9 a.m. to 4 p.m.—Professor Cleland, M.D., D.Sc., LL.D., F.R.S., assisted by J. Yule Mackay, M.D., and other Demonstrators.

Practice of Physic, 11 a.m.—Professor Gairdner, M.D., LL.D.

Materia Medica, 12 noon, and Pharmaceutical Laboratory. —Professor Charteris, M.D., and Dr. Napier.

Institutes of Medicine, 12 noon, and Physiological Laboratory.—Professor McKendrick, M.D., LL.D., F.R.S., assisted by J. McGregor Robertson, M.A., M.B., the Muirhead Demonstrator.

Surgery, 1 p.m.—Professor Macleod, M.D.

Midwifery, 2 p.m.—Professor Leishman, M.D.

SUMMER SESSION.

During the Summer Session, which opens on 2nd May, the Courses of Botany (Professor Bower, F.L.S.), Practical Chemistry, Forensic Medicine (Professor Simpson, M.A. Cantab., M.D.), Public Health (Professor Simpson), and Clinical Medicine and Clinical Surgery are given. There are also Courses of Anatomy (Lectures on Embryology), Practical Anatomy, Zoology, Practical Zoology, Vegetable Histology, and Practical Botany, Practical Physiology (including Histology), Practical Materia Medica, Practice of Physic, Practical Pathological Histology, Operative Surgery, and Lectures on Diseases of Women.

LECTURERS.—Pathology—The Courses of the Pathologist of the Western Infirmary, Dr. Joseph Coats, and of the Pathologist of the Royal Infirmary are recognised.

Diseases of the Eye.—Thomas Reid, M.D., Waltonian Lecturer (Summer Course).

Insanity.—Dr. David Yellowlees, Royal Asylum, Gartnavel (Summer Course).

WESTERN INFIRMARY.—This Hospital, near the University, contains 400 beds for Medical and Surgical Patients, also Wards for Skin Diseases, and one for Diseases peculiar to Females.

DEGREES.—Three Medical Degrees are conferred, viz.: Bachelor of Medicine (M.B.) and Master of Surgery (C.M.), which must be taken together, and Doctor of Medicine (M.D.); all of which are recognised by the Medical Act as qualifying for practice throughout the British Dominions.

COST OF EDUCATION.—The Fee for each class is £3 3s., and the total minimum expenses for classes, hospital, and graduation fees for M.B. and C.M. amount to about £90. The fee for M.D. is £15 8s.

BURSARIES.—Bursaries to the annual amount of £1,150 may be held by students during their medical studies.

Full particulars as to the course of education and examination required for the Degrees, and the Preliminary Examination required to be passed by Students before beginning medical study, will be found in the University Calendar (by post 3s.); or a syllabus of the regulations, fees, &c., may be obtained by applying to Mr. YOUNG, M.A., Matriculation Office.

UNIVERSITY OF EDINBURGH.

SESSION 1886-87.

Principal—**SIR WILLIAM MUIR,**
K.C.S.I., D.C.L., LL.D., &c.

The SESSION will be opened on Tuesday, 19th of October, 1886, at 2 p.m., with an Address by the Principal.

The CLASSES for the different Branches of Study will be opened as follows, and will meet daily (Saturdays excepted) unless otherwise specified.

MEDICINE.

Dean—Professor THOMAS R. FRASER, M.D.

Practice of Physic, Wednesday, October 20th, nine.—Prof. Grainger Stewart, M.D.

Chemistry, Wednesday, October 20th, ten.—Prof. Crum Brown, M.D.

Surgery, Wednesday, October 20th, ten.—Prof. Chiene, M.D.

Institutes of Medicine or Physiology, Wednesday, October 20th, eleven.—Prof. Rutherford, M.D.

* Practical Physiology, Friday, October 2nd, nine.—Prof. Rutherford, M.D.

Midwifery and Diseases of Women and Children, Wednesday, October 20th, eleven.—Prof. Simpson, M.D.

* Clinical Surgery (Royal Infirmary, Monday and Thursday)—Thursday, October 21st, twelve. Prof. Annandale, M.D.

* Clinical Medicine (Royal Infirmary, Tuesday and Friday)—Friday, October 22nd, twelve to two.—Prof. Grainger Stewart, T. R. Fraser, and Greenfield; and Prof. Simpson on Diseases of Women.

Anatomy, Wednesday, October 20th, one.—Prof. Sir William Turner, M.B.

* Practical Anatomy—Monday, October 4th, daily.—Prof. Sir William Turner and Demonstrators.

* Anatomical Demonstrations—Wednesday, October 20th, four.—Prof. Sir William Turner and Demonstrators.

Materia Medica, Wednesday, October 20th, two.—Prof. Thomas R. Fraser, M.D.

* Practical Materia Medica (including Pharmacy)—Wednesday, October 20th, ten.—Prof. Thomas R. Fraser, M.D.

* Practical Chemistry—Wednesday, January 5th, two.—Prof. Crum Brown.

General Pathology, Wednesday, October 20th, three.—Prof. Greenfield, M.D.

* Practical Pathology, Wednesday, October 20th, daily.—Prof. Greenfield, M.D.

Botany (given in Summer Session)—Prof. Dickson, M.D.

Medical Jurisprudence (given in Summer Session)—Prof. Sir Douglas MacLagan.

* Natural History—Wednesday, October 20th, two.—Prof. Ewart, M.D.

* Practical Natural History—Wednesday, October 20th, eleven.—Prof. Ewart.

Mental Diseases (given in Summer Session)—T. S. Clouston, M.D.

Diseases of the Eye (given in Summer Session)—Douglas Argyll Robertson, M.D.

Clinical Instruction on Diseases of Children at Royal Hospital for Sick Children—Monday, November 1st, ten.—James Andrew, M.D.; James Carmichael, M.D.

Comparative Embryology—Tuesday, November 2nd, three.—George Brook.

The Philosophy of Natural History—November—G. J. Romanes, M.A.

Royal Infirmary at noon daily.

Means are afforded for Practical Instruction during both the Winter and Summer Sessions, in the various Laboratories and Museums.

Information relative to Matriculation and the Curricula of Study for Degrees, Examinations, etc., may be obtained on application to the Dean of the Faculty of Medicine, University New Buildings, and full details are also given in the University Calendar, published by James Thin, 55 South Bridge.

By Authority of the Senatus,

JOHN KIRKPATRICK,
Sec. Sen. Acad.

September, 1886.

* Also given in Summer Session.

GUY'S HOSPITAL MEDICAL SCHOOL

The WINTER SESSION commences on

MONDAY, OCTOBER 4.

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APPOINTMENTS.—The House-Surgeons and House-Physicians, the Obstetric Residents, Clinical Assistants and Dressers, are selected from the Students, according to merit, and without payment. There are also a large number of Junior Appointments, every part of the Hospital Practice being systematically employed for instruction.

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Seventeen Scholarships, Prizes, and Medals, varying from £50 to £10 each, are open for competition to all the Students.

The Hospital is in close proximity to the Metropolitan, District, South-Eastern, Brighton, Chatham, North London, and Great Eastern Railway systems.

For prospectus and further information apply to the Dean, Dr. F. Taylor, Guy's Hospital, London, S.E.

August, 1886.

THE MIDDLESEX HOSPITAL MEDICAL SCHOOL.

THE WINTER SESSION will OPEN on MONDAY, OCTOBER 4th, at Three P.M., with an Introductory Address by Dr. C. Y. BISS, M.A., after which the Prizes awarded during the previous Winter and Summer Sessions will be distributed.

The ANNUAL DINNER of the past and present Students and their Friends will take place the same evening at the Holborn Restaurant.

The Hospital contains 310 Beds, and there are special departments for Cancer, Diseases of the Eye, Women, and Syphilis. In the new Out-patients' Department, in addition to Medical and Surgical cases, special days are devoted to Diseases of Children, the Throat and Ear, the Skin, and cases requiring Electrical Treatment.

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Assistant Physicians—Dr. J. K. Fowler, Dr. C. Y. Biss, Dr. J. J. Pringle.

Obstetric Physician—Dr. Arthur W. Edis.

Physician to the Skin Department—Dr. Robert Liveing.

Assistant Obstetric Physician—Dr. W. A. Duncan.

Consulting Surgeons—Mr. Shaw, Mr. Nunn.

Surgeons—Mr. Hulke, F.R.S., Mr. George Lawson, Mr. Henry Morris.

Assistant Surgeons—Mr. Andrew Clark, Mr. A. Pearce Gould, Mr. J. Bland Sutton.

Ophthalmic Surgeon—Mr. William Lang.

Aural Surgeon—Mr. Arthur Hensman.

Consulting Dental Surgeons—Sir John Tomes, F.R.S., and Mr. Turner.

Dental Surgeon—Mr. Storer Bennett.

Assistant Dental Surgeon—Mr. W. Hern.

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The SESSION 1886-87 will commence on Friday, October 1st, 1886; by that date the New College Buildings will be ready for occupation. The very extensive additions that have been made to the School premises will afford complete provision for the teaching of all branches of Medical Science, the accommodation provided being more than double that which was provided in the Old Buildings. An inaugural ceremony will take place, of which due notice will be given.

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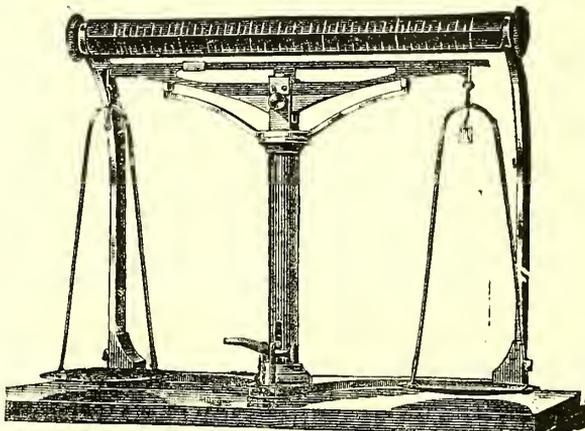
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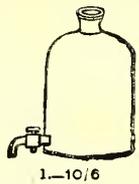
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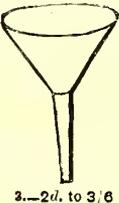
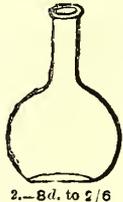
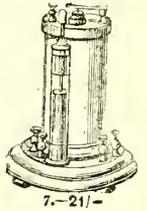
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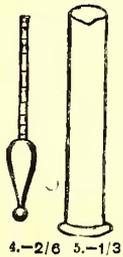
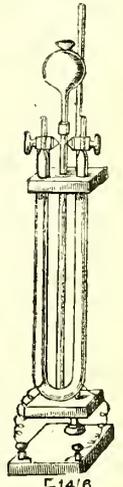
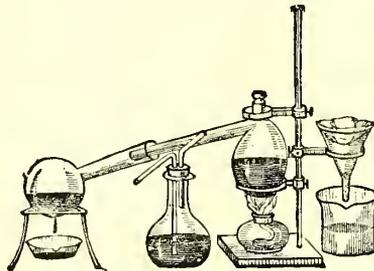
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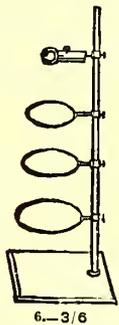
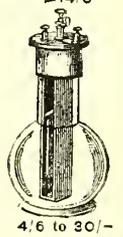
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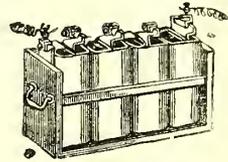
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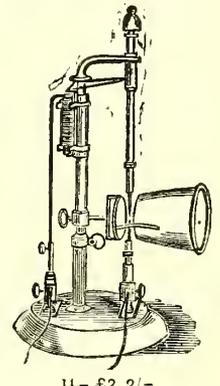
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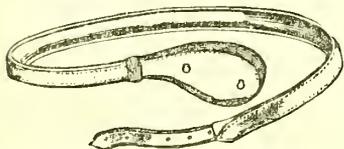


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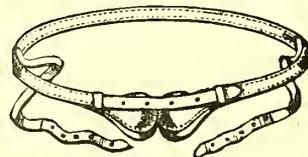


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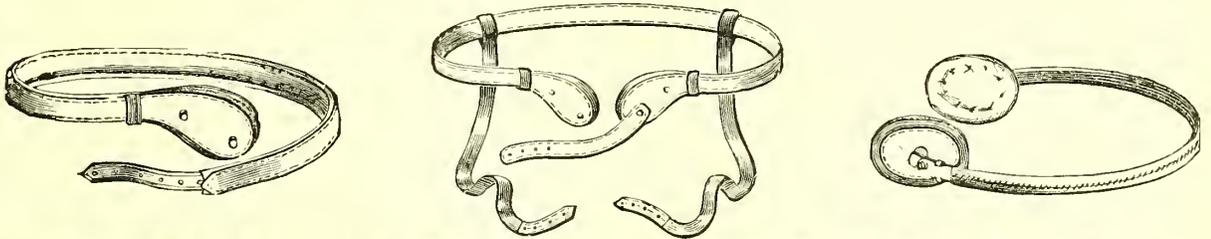
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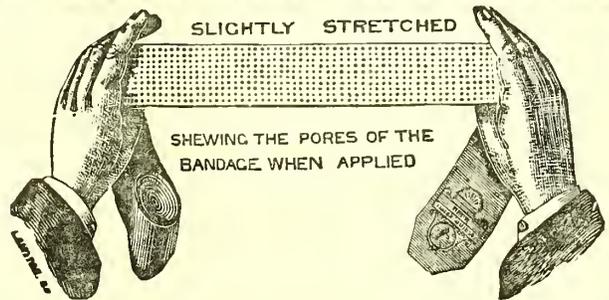
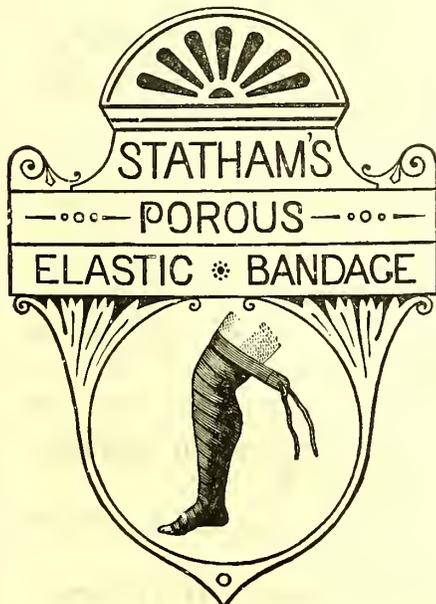
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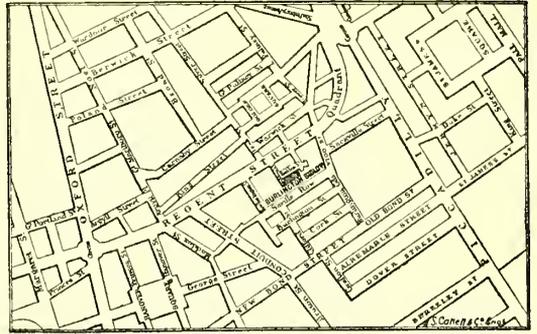
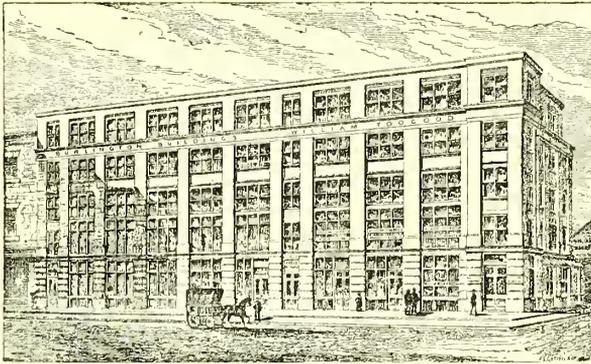
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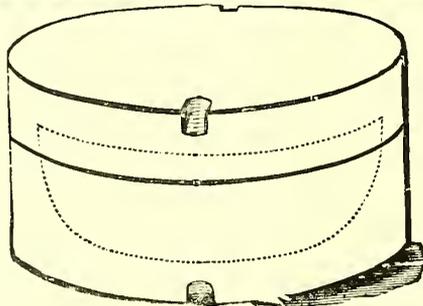
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Special Attention given to Quality. Quotations Post Free to any part of the world on application. The above will be found the BEST and CHEAPEST HOUSE in the TRADE.

FOR
DISPENSING, DRUGS,
OILS,
MINERAL WATERS,
PERFUMERY,
PATENT MEDICINES,
&c., &c.

GLASS BOTTLES

MANUFACTURED BY

KILNER BROS.

FOR
FEEDING,
In GREEN &
WHITE GLASS,
and all
Kinds of Fittings.
Best Quality.

No. 3 GREAT NORTHERN GOODS STATION, KING'S CROSS, LONDON

HOME and FOREIGN BUYERS are invited to Correspond with us, as we have a very LARGE SELECTION to choose from.

Send for our Illustrated Price Current—a Revised Edition just out.

8 oz., 10 oz., 15 oz., 20 oz.
Fluid, this shape pot.



FRENCH SCREW GLASS POTS & BOTTLES, WITH METALLIC NICKELLED CAPSULES.

The above new method (first introduced by G. V. De Luca) excels all others for neatness and elegance, and is specially adapted for export. Made in various new designs. Spécialité for Bottles for all kinds of Confectionery, Essences Manufacturers and Sundries. N.B.—Beware of imitations sold at cheap prices, the capsules being a mixture of lead or tinned iron.

Manufacturer of the GLASS POMADE POTS WITH GLASS COVERS, in Opal White and White Flint in all sizes.

G. V. DE LUCA, French Flint Glass Manufacturer, 6 and 7 Long Lane, LONDON, E.C.
WHOLESALE AND EXPORT AGENTS—S. MAW, SON & THOMPSON, 7 to 12 ALDERSGATE STREET, LONDON, E.C.

Illustrated Catalogue for Patent Screw Capsule on application.

DISPENSING, ETC., BOTTLES.

WHITEHEAD & CO., 81 & 83 BLOOMSBURY, OXFORD ST., MANCHESTER,

Supply every description of above, and are second to no house in the kingdom, either in respect of quality or price.

Quotations for bottles of any size, shape, or colour, stating quantity required, on application.

OWNERS OF PROPRIETARY ARTICLES & SHIPPERS PLACED ON BEST TERMS

THE
ISLINGTON GLASS BOTTLE CO.

(H. HARRIS & CO., Proprietors),

153 UPPER THAMES ST., CITY, LONDON, E.C.,

Continue to supply their CELEBRATED

DISPENSING BOTTLES & PHIALS

AT LOWEST MARKET PRICES.

6-oz. and 8-oz., 8/ per gross; 3-oz. and 4-oz., 7/ per gross; White Phials at very low prices; Stopped Rounds, Pomades, Graduated Measures, Panel Bottles, Castor Oil Bottles, Soda Water and Mineral Water Bottles, and all other kinds at very low prices. Write for Prices and see our Samples before ordering of any other house.

Bankers—London and Westminster Bank. Established upwards of 50 years.

GEORGE HAYNES & CO.,

Hampstead Cotton Mills,

CHERRY TREE LANE, STOCKPORT,

MANUFACTURERS OF

Bleached and Absorbent Wools,

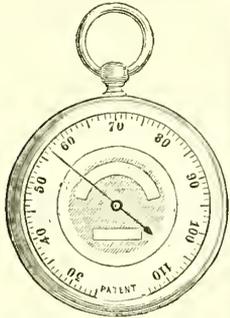
GREY WOOL,

COLOURED WOOLS, AND JEWELLERS' SHEETS.

WHOLESALE AND EXPORT ONLY.

Telegraphic address—HAYNES STOCKPORT.

Of all Instrument
Makers and Opticians.



EXACT SIZE.

In 18-carat Gold, 50/-,
and Sterling Silver, 21/-.

The only First Class Award for Thermometers, Medical & Sanitary Exhibition, London, 1881,
TO THE
PATENT METALLIC THERMOMETERS
(IMMISCH'S PATENT).

*The universal opinion of the Medical Press is distinctly in favour of the adoption of this
Thermometer for Clinical purposes for the reasons as stated below.*

Medical Press, April 28, 1886.—"Everyone who has experienced the annoyance of a broken Clinical Thermometer will be prepared to appreciate the value of an instrument which, while yielding accurate indications of temperature, is at the same time so constructed that breakage is almost impossible. From a trial extending over several months we are able to say it is the equal of the best constructed of the ordinary glass instruments, while for convenience and comfort vastly superior."

Lancet, December 5, 1885.—"Equally sensitive and accurate as glass Clinical Thermometers."

British Medical Journal, December 12, 1885.—"Tested in the axilla in the usual way, the result coincided with reading of certified thermometer of the bulb type, its sensitiveness being fully equal at the least to the bulb instrument, while its shape and solidity offer distinct advantages over the thermometers in general use, the expense of which constitutes a notable item in the instrument bills of hospitals and of medical men in active practice."

Prov. Medical Journal, October 1, 1885.—"Sensitive, Durable, and Reliable."

Meteorological Mag., September, 1885.—"The smallest accurate Thermometers we have yet seen."

WORKS—
OLDBURY, near
BIRMINGHAM.

GIBBS, CUXSON & CO., WEDNESBURY, Telegraphic Address—
"Dressings Wednesbury."

MANUFACTURERS OF

SURGICAL DRESSINGS of every description,

AS SUPPLIED TO THE LEADING LONDON AND PROVINCIAL HOSPITALS.

GAUZE ALEMBROTH—Carbolised, Eucalyptised, Iodoform, Sanitas, Thymol, Tarred, Sublimate, Sero Sublimate, &c.

COTTON ALEMBROTH—Aluminated, Borated, Benzoated, Camphorated, Carbolised, Eucalyptised, Ferrated, Iodised, Picroated, Iodoform, Resorcinated, Salicylated, "Sublimate," Tarred, Tannated, Thymolated, &c.

LINT ALEMBROTH—Doricic, Carbohc, Iodoform, Salicylated, Thymolated, &c.

TOW—Carbohc, Salicylic, Tarred, Styptic.

PROTECTIVE—Silk, Green, Yellow, Paper, Gutta-percha, Tissue, Pink and Drab Jaconette.

LIGATURES—Catgut (Carbolised, Chromic, &c.), Silk (Carbolised and Plain).

PADS—4 × 4, 6 × 6, 6 × 9, 18 × 10, &c., Absorbent Padding (Plain, Carbolised, and Aromatised).

PLASTERS—Belladonna, Strapping, Mustard, Rubber, Soap, &c., on glazed and unglazed Calico, Linen, Holland, Swan's-down, Leather, &c.

BANDAGES—Carbohc Gauze, Open Wove, Muslin, Calico, Plaster of Paris, &c.

SUPPOSITORIES, PESSARIES, & BOUGIES, &c., see List.

G. C. & Co. pack Menthol Cones for Merchants, Shippers, and the Wholesale Trade.

Large Consumers and Buyers are requested to write for Special Quotations. Price Lists on application.

IMPORTANT TO COLONIAL AND SPANISH BUYERS.

A. HUTCHINSON & CO.,
MANUFACTURERS OF INDIARUBBER GOODS.

SPECIALITIES—"The Odourless Bed Sheetting," Rose Pink, Black, Drab, or Cream—Sponge Bags, "Pointillé," Fancy Double Proof, Star Check—Zephyr Air Pillows and Cushions, warranted in all climates, very light, soft, bright colours or drab, and inexpensive—Improved Ice Bags—Bandage "Heftband"—The Lady Help Apron in all colours.

TO BE OBTAINED THROUGH ANY WHOLESALE HOUSE.

Manufactories—PARIS, LANGLÉE (Montargis), FRANCE; MANNHEIM, GERMANY.

WAREHOUSE—70 BASINGHALL STREET, LONDON, E.C.

Telegraphic Address—"HUTCHINSON LONDON."

E. BENTLEY & SONS'
NEW OPAL GLASS POTS,

FOR DISPENSING TOOTH PASTE, COLD CREAM, & OTHER PURPOSES

PRICES:—

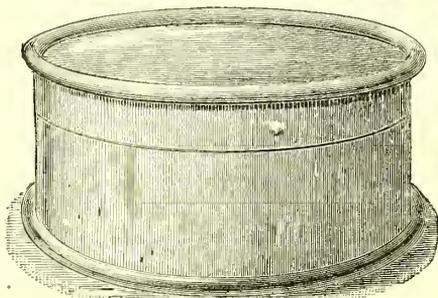
Lip Salves ½ oz. 1 oz. 2 oz. 1 oz. 1½ oz. 2 oz. 3 oz. 4 oz.
1/4 1/4 1/4 1/6 1/8 1/10 2/1 2/8 3/4 per doz.

E. BENTLEY & SONS, DRUGGISTS' SUNDRYMEN,

Manufacturers of Ship and Family Medicine Chests of every description.

All kinds of Bottles for Chemists' and Perfumers' use kept in stock or made to order.

14 TABERNACLE ST., & 1 & 2 HILL ST., FINSBURY, LONDON, E.C



ESTAB.
1847.

EDWARD TAYLOR,

ESTAB.
1847.

MANUFACTURER OF ALL KINDS OF

Medical, Surgical, Marginal, and Belladonna POROUS PLASTERS,
For Home Trade and Export to all Climates,
ISLINGTON SQUARE, SALFORD, MANCHESTER.

SAMPLES AND QUOTATIONS ON APPLICATION.

THE SURGEONS' LINT

V.B. QUALITY.

The superior quality of NEWSOME'S ABSORBENT SURGEONS' LINT is universally admitted.

The V.B. Quality is quite pure and of great superficial area and exquisite softness.

The C. Quality is equally absorbent and pure, but stronger in fabric.

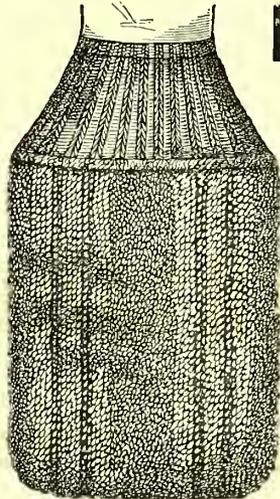
Newsome's Bleached Rolled Bandages, 3 in., 2½ in., 2 in. Also Surgical Absorbent Open Bandages.

Specially Bleached and Grey Carded Cotton Wools, Absorbent and Bleached and Grey Waddings; also Sheet Waddings, Tow, &c.

THE TRADE SUPPLIED THROUGH THE LONDON AND PROVINCIAL WHOLESALE HOUSES, OR FROM

C. NEWSOME, Spinner and Manufacturer, Jersey Street Mills, Ancoats, **MANCHESTER.**
London Agents: B. PRATT & CO., Wood Street, E.C.

HOLDFAST BATH GLOVE.



REGISTERED 21,184.

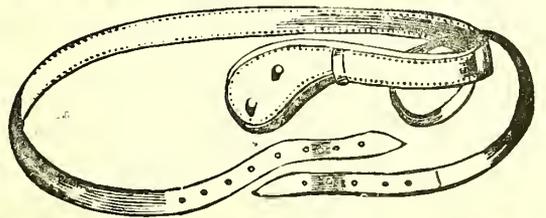
HAYWOOD'S SURGICAL APPLIANCES.



"Acme" Brace.

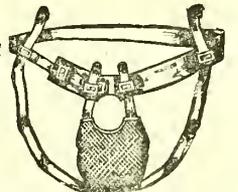


Elastic Stockings.



Trusses.

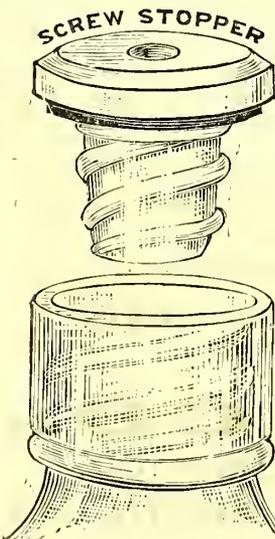
Greatest attention paid to Special Orders, which are invariably forwarded per return of post.



Suspensory Bandages.

List of Prices and Directions for Measurement forwarded on application.

J. H. HAYWOOD, Castle Gate, NOTTINGHAM.



"GRAND DUCHESS" FEEDING BOTTLES

With Bent Necks and Glass Screw Stoppers, fitted with Best Black Indiarubber Fittings.

6d. ... 3/6 per dozen ... 36/- per gross.

IN 1-DOZEN WOOD BOXES.

1/- ... 7/- per dozen ... 72/- per gross.

1/6 ... 9/- " " ... 96/- " "

IN SEPARATE CARD BOXES, HANDSOMELY LABELLED.

"GRAND DUCHESS" Feeding Bottles, Pale Green Glass Bottles, with Bent Necks, fitted with White Indiarubber Fittings and Boxwood Top Cork, 24/- gross, or with Black Indiarubber Fittings ... 28/- "

If with White Glass Bottles, 3/- per gross extra.

Delivered to any Railway Station in London, or sample order to any London House for enclosure.

MANUFACTURED BY

J. S. SIMCOCK, 311 Goswell Road, LONDON, E.C.

SYRUP HYPOPHOSPH. COMP.,

LORIMER'S.

EACH FLUID DRACHM CONTAINS—

Lime Hypophosphite, 2 grs.	Manganese Hypophosph. ¼ gr.
Sodium " 1½ "	Quinine " ¼ "
Potassium " 1 "	Strychnine " 1/16 "
Iron " ½ "	

DOSE.—For an Adult, One Teaspoonful in a Wineglass of Water after each meal. Children in proportion.

½ & 1 lb., stamped, 24s. & 42s.; unstamped, 21s. & 36s. doz.
In bulk for Dispensing, 2s. 6d. lb.

Obtainable direct, or through all Wholesale Druggists.

We claim for this Preparation:—

1st. That our formula is original. There is no other preparation of the Hypophosphites which contains the same proportions, or so large proportions, of the various salts.

2nd. Our formula is definite and unvarying, and, being stated on every label, is non-secret. Hence the Practitioner knows what he is handling, and may vary the dose according to the requirements of the case, and is not encouraging the trade in secret or quack nostrums.

3rd. It is pleasant to take.

4th. The Strychnine and other active ingredients are held permanently in solution, so that it does not precipitate, become cloudy, flocculent, or unsteady.

5th. It contains no free acid, but is neutral, or very slightly alkaline, and will not disagree with the most delicate stomach.

6th. Lorimer's Hypophosphites are superior in chemical and therapeutical value to all other similar preparations; and free trial samples are supplied to members of the Medical Profession on application, in order to enable them to judge as to the fairness of this claim.

IMPORTANT EVIDENCE.

A few Testimonials out of many recently received. The originals may be seen here if desired.

"Messrs. Lorimer & Co.

"Dear Sirs,—Your Syrup of Hypophosphites has proved of such inestimable value in my own case, that I can hardly say too much in its favour as a remedial agent. For five weeks I laboured under great nervous prostration, and was in a semi-æmic condition, with debility of the digestive organs, and such torpor of the bowels as necessitated the constant use of aperient medicine (a very unusual want with me), which I, aided by the Infusions of Columba, Gentian, &c., accompanied by preparations of iron, with very little benefit, till I happened to see the formula of your Syrup looking over the *British Medical Journal*. The action of your preparation has been *all but magical*; by the time I had taken five doses the obstinate constipation was relieved, my appetite returned, and I felt stronger than I had done for many months previously. I am happy to say these good results have proved to be permanent. Yours faithfully,
"Birmingham, June 30, 1886. "A PHYSICIAN."

"Dewsbury, April 25, 1886.
"An invaluable remedy in Pulmonary Tuberculosis—the patients like it, finding it an agreeable stimulant and tonic, and quickly improving the appetite."
"M.D."

"Oldham, March 9, 1886.
"I find that its therapeutical action is fully equal to, and just as reliable as, that of any similar preparations that are in the market, whilst its very moderate price adds a still further recommendation to its adoption. I shall in future use no other."
"M.D."

"Birmingham, March 19, 1886.
"From its effects I imagine its composition to be far more reliable than that of the other samples I have yet tested. Its taste can hardly be objected to by the most fastidious."
"M.R.C.S."

"Kidderminster, March 23, 1886.
"I have given your Syrup Hypophosph. Co. in several cases, and always with marked benefit. I consider it an elegant compound, and superior to all others."
"Honorary Surgeon, Kidderminster Infirmary."

DISTILLED EXTRACT OF WITCH HAZEL.

For Cuts, Bruises, Burns, Scalds, Hæmorrhages, and all inflamed and irritated surfaces.

In Bulk per lb., 2s. 6d.; or in Bottles, 12s and 30s. per doz.

This distillate is made entirely from the young growing shoots of the Witch Hazel shrub; it is greatly superior to the quack nostrums advertised under various fanciful names.

BROMO-CAFFEINE

An effervescent preparation, containing one grain of the Hydrobromate of Caffeine in each heaping teaspoonful. For headaches, &c.
5 lb.; 3/ bottles, 24/ dozen.

COCA WINE,

1s. 10d. per lb. Imperial Pints, stamped,
32s.; unstamped, 29s. doz.

COCAINE LOZENGES,

1/10 gr. in each, ez. 6d.; Decorated Tin Boxes, stamped,
9s.; unstamped, 7s. 6d. dozen.

CHEMICAL FOOD (Parrish's Gold Medal), ¼, ½, and 1 lb. Bottles, 4/3, 6/3, and 10/9 doz.
In bulk, lb. 8d., 6 W. Qrs. 7d., Cwt. 50/.

COD LIVER OIL, Tasteless and Non-freezing, in W. Quarts, 6/, casks, 5/6; 8, 16, 32 oz. Bottles, plain, &c., labels, 6/, 10/, 18/ dozen.

HOP TONIC, in large square Amber Bottles, 4/6 and 2/6 each; unstamped, 21/ and 12/ dozen.

INFANT'S FOOD, Cooked and Malted, bulk, lb. 8d.; large 1/ Tins, 6/6 dozen.

LIME JUICE CORDIAL, Bottles, 6 and 12 to gallon, 8/6 and 4/6 dozen.

MENTHOL CONES. All patterns, best value in market, 6d. and 1/; 3/ and 5/6 dozen.

 We do our own Printing, and will be pleased to supply any of our Specialities with Buyer's Name on Labels and Handbills instead of our own when preferred.

FULL LISTS ON APPLICATION.

LORIMER & CO.,

HARGRAVE PARK ROAD, LONDON, N., & 208 BROADWAY, NEW YORK.

AWARDED SIX GOLD AND PRIZE MEDALS, LONDON AND CALCUTTA, 1884.

Telephone Number, Advertisers' & Buyers' Reference List, AND INDEX TO ADVERTISEMENTS. TELEGRAPHIC ADDRESS—CHEM DRUG LONDON.

ADVERTISEMENTS APPEARING IN THIS ISSUE OF "THE CHEMIST AND DRUGGIST."

Please note that to satisfy Post Office requirements the Advertisements are paged twice—once in Arabic, once in Roman numerals.

Table listing various advertisements and their page numbers, including categories like 'A1 BRAND MENTHOL CONES', 'ALLEN & HANBURYS Manufacturing Pharmacists', 'HAYNES, GEORGE, & CO.', 'MUMFORD, G. S. Linseed, Fuller's Earth', etc.

CLASSIFIED LIST OF ALL ADVERTISERS

Whose Announcements appear in "THE CHEMIST AND DRUGGIST." Those whose Names do not appear above are published in one of the other issues of this month.

AERATED AND MINERAL WTS AND PLANT [See SYPHONS and ESSENCES.] Aescular Bitter Water Co (Lim.) Apollinaris (Hunyadi, Friedrichshall, and Apollinaris) Barnett and Foster Brathy and Hinchliffe British Syphon Co Bush, W. J., and Co. (Foam Producer, &c.) Chemists' Aerated Waters Association Ellis (Ruthin) Favarger, H. (Geraud and Co. Gueret Freres Harston & Co. Hassall and Co. (Citric Acid, Phospho)

Aerated & Mineral Wts. & Plant,—cont. Hooper and Co. (Brighton Seltzer) Ingram and Royle (Mineral and Vichy) Jewsbury and Brown Kimmond and Co. La Bourboule Meadocroft, W. Mills and Co. (Bourne) Montserrat Lime Juice Schweppe and Co. Stevenson and Howell Taylor, T. and F. J. Tyler, Hayward, and Co. Vallet, L. (Bottles) Younger and Ridley (Temperance Wines) ALOIN Smith, T. and H., and Co.

ACETIC ACID Dunn and Co. Hirst, Brooke and Hirst Lindsey, C. R., and Co. ALEALOIDS Howards and Sons (Cinchona) Smith, J. and H. AMMONIA May and Baker Hirst, Brooke and Hirst APPARATUS Carter, J. H. Follows and Bate, Lim. Knowles, Thos. (Balances) Maud, W. R. (Measuring) May, Roberts (Water-bath) Morgan Crucible Co. Orme (Scientific) Pat. Plumbago C. Co. Rothermel, Paul (Vinegar) Wolters Otto (Balances)

AGENCIES ABROAD Cocking (Japan) Davison, A. [delfhia] Eisner and Mendelson (Philadelphia) Evans, Sons and Mason (Canada) Felton (Melbourne) Fougere (New York) Hormusjee Kuttonjee (Bombay) Kempthorne (New Zealand) Lennon (Port Elizabeth) MacNaughtan (New York) Mayhew, E. (Wstr. Australia) Phillips and Co. (Bombay) Prosser, E., and Co. (Sdney) Roberts (Paris, &c.) Rocke (Melbourne) Sharland & Co. (Auckland N.Z.) Shirreffs and Co. (Allahabad) Symes and Co. (Simla)

BANDAGES Bailey and Son Boie Hall Mill Co. Gibbs, Cuxson, and Co. Hutchinsohn, A., and Co. ("Heft-Liverpool Lint Co. band") Robinson and Sons Seabury and Johnson Strathairn and Co (Poro Elastic) BANE Birkbeck Bank BATH GLOVES Pattison, G. BEDS, WATER Hooper and Co. Hutchinsohn, A., and Co. (Sheeting Rubber) BEESWAX & HONEY Kemp, W., and Son

BICARB. SODA

Rrunner, Mond and Co.
Gaskell, Deacon and Co.
Howards and Sons
May and Baker

BISMUTH PREP.

Howards and Sons
May and Baker

BOOKS

Atfield's Chemistry
Kirke's Physiology
Lewis, H. K.
Tully, J.
Dobell, Dr. (Bournemouth)

BOTTLES

Ayrton and Saunders
Barnett and Foster (the
"Eclipse" Standard)
Brady and Finchliffe
Brooks, Peel (Perfumers)
De Luca, G. V.
Glasgow Apothecaries' Co.
Harris and Co.
Hearn, Riddle
Hunt's Bottle Caps
Isaacs, L., and Co.
Kilner Bros.
Pothe
Simcock, T.
Simcock, W.
Thompson, Millard and Co.
Toozood (Feeding)
Vallet

BOXES

Austin and Co. (Cardboard)
Ayrton and Saunders (Willow)
Brady and Finchliffe
Ester's Turned Wood
Metz, Paul (Pine and Willow)
Noakes, B., and Co.
Robinson and Sons (Cardboard)
Rogers, J., and Co.
Self-Opening Tin Box Co.

BROMIDIA

Battle and Co.

BRUSHES

Dukas and Co.
Gérard, A. (Toilet)

BUTTER COLOUR

Bush, W., Son, and Co. (Mari-
goldine)

CAMPHEOR

Howards and Sons (pathic)
Keene and Ashwell (Homo-
May and Baker
Murray, Sir James (Fluid)

CAPSULES

Betts and Co. (Metallic)
Denoual, J. (Medicinal)
Hooper, B., and Co.

CARMINE

Bush, W. J., and Co.
Sellers

CATALOGUES

Bourne, Johnson, and Latimer
Newbery and Sons
Quarterly Price Current (Maw's)

CEMENT

Foulkes
Kay (Coaguiline)

CHALK PRECIP.

Dunn and Co.
Levermore and Co.

CHEMICALS

Bramwell, W., and Son
Brunner, Mond and Co. (Bicar-
bonate of Soda)
Bush, W., and Co.
Dunn and Co.
Gaskell, Deacon and Co. (Bi-
carbonate of Soda)
Howards and Sons (Pharma-
ceutical)
May and Baker
Smith, T., and H.
Summer, R., and Co.
Sutton and Co. (Volumetric
Analysis)
Typeke and King
Walker, Troke and Co.
Zimmermann, A. and M.

CHLORODYNE

Bage, T., Blyton, and Co.
Davenport (Brown's)
Freeman
Towle, A. P.

CHLOROFORM, &c.

Duncan, Flockhart
Macfarlan, J. F.
Smith, T., and H.
Zimmermann

COCAINE

Howards and Sons
McKesson and Robbins (Hydro-
chlorate of)

COCOA & CHOCOLTE

Catbury Bros.
Fry (Malted)

COO-LIVER OIL

Allen and Hanburys
Baiss Bros.
Beesley, J. E., and Sons (Iodized)
Carr, Graham and Co.
Hooper, B., and Co.
Smith, T. J.
Southall Bros. and Barclay (A.D.)

COFFEE

George and Welch (Dandelion)
Bymington (Various Essences)

COMPRESSD MEDCNS

Hooper, B., and Co.
Newbery, F., and Sons

CORN CURES

Robinson, B.
Young's

COTTON WOOL.

Haynes and Co.

CRUCIBLES

Morgan Crucible Co.
Pat. Plumbago Co.

DENTIFRICES

Beddard, J.
Jewsbury and Brown
Martin, J. W. (Rosallum)
Rimmel
Sutton, O., and Co.
Thompson and Capper
Woods, W. (Arcaea Nut)

DENTISTRY

Buck, F. (Lenses)
Jones, Dr. C. H. (Mechanical)

DISINFECTANTS

Government Sanitary Co.
Harrison and Co. (Hydroleine)
National Chemical Co.
New Carbolic Sanitary Co.
Rimmel
Sanitas
Steele & Co. (Chloride of Lime)
Vogt, G.
Wyleys and Co. (Pure Terebene)

DOG MEDICINES

Spratts (Patent) ("Fibrine")

DRUG MILLS

Bailey & Co.
Carter, J. H.
Follows and Bate [(Entrprs.)
Werner and Pfeleiderer

DRUGGISTS' SUN.

Ayrton and Saunders
Baiss Bros.
Bourne, Johnson
Evans, Lescher and Webb
Lairitz (Pine Wool)
Lynch and Co.
Maud, W. R.
Maw, S., Son and Thompson
May, Roberts and Sons
Newbery, F., and Sons
Schutze and Co.
Simcock, W.
Thompson, Millard
Toozood

DUBBIN

Jamieson and Co.

DUTCH MEDCNS.

Bieber, J. D.

DYES

Ayrton and Saunders
Judson's (Patent Show Case)

EAU DE COLOGNE

Farina, J. M. (Gegentüber)

ELECTRIC APPAR

Darton, F., and Co.
Orme and Co.

ENEMAS

Ingram and Son
Lynch and Co.
Schutze and Co.

ENGRAVERS

Barker, W., and Son

ESSENCES, FRUIT

AND SOLUBLE

Brady and Finchliffe
Bush, W. J., and Co.
Fletcher, Fletcher and Steven-
son
Jackson, J., and Co.
May and Baker
Meadowcroft, W.
Stevenson and Howell
Summer and Co. (Ginger Ale)
Sutton, Francis and Co. (Stan-
dard Solutions)

TYPEKE AND KING

Walker, Troke and Co.
Zimmermann, A. and M.

EXTRACT, MEAT

Brand and Co.
Burgoyne, Burhidges and Co.
(Dr. Koche)
Coleman & Co.
Liebig Co.
Pothe (Leube Rosenthal)

EXTRACT, MEAT

Brand and Co.
Burgoyne, Burhidges and Co.
(Dr. Koche)
Coleman & Co.
Liebig Co.
Pothe (Leube Rosenthal)

EXTRACT, MEAT

Brand and Co.
Burgoyne, Burhidges and Co.
(Dr. Koche)
Coleman & Co.
Liebig Co.
Pothe (Leube Rosenthal)

EXTRACT, MEAT

Brand and Co.
Burgoyne, Burhidges and Co.
(Dr. Koche)
Coleman & Co.
Liebig Co.
Pothe (Leube Rosenthal)

ETHER

Duncan, Flockhart and Co.
Howards and Sons [(Chloric)
May and Baker
Robbins

ESSENTIAL OILS

Bush, W., Son and Co. (Imprs.)
Bush, W. J. (Lemons, &c.)
Clay, Dod & Co.
Cocking (Japan Pepper)
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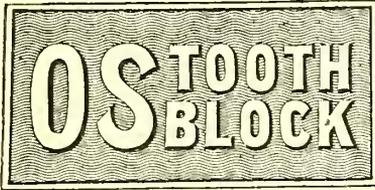
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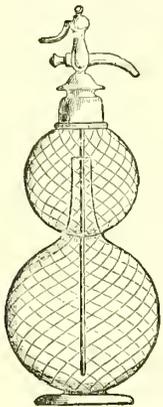
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The high reputation this bottle has achieved is due to the fact of its being in every particular the most perfect yet introduced; and when compared with others in the market it stands pre-eminent. It is most simple in its working parts, therefore the least liable to get out of order; it is the most easily opened, the lightest pressure on the handle being sufficient; it produces a more highly-charged gaseous water than is usually obtained from syphons; it compares most favourably in appearance with any, and the metal top being entirely free from lead, the prejudice against syphon drinks is at once removed, as the liquid passes over pure tin only.

All our Syphons are now fitted at the base with a groove, so that drips from the spout after use are supplied at no extra charge, and will be found of great utility in preventing stains, &c., upon table linen. This is a desideratum long been wanting, particularly for private-house use. Send for sample; forwarded upon receipt of 2s.

NOTE.—Syphons made with our patent foot for collecting excess of liquid dripping from the spout after use are supplied at no extra charge, and will be found of great utility in preventing stains, &c., upon table linen. This is a desideratum long been wanting, particularly for private-house use. Send for sample; forwarded upon receipt of 2s.

Any name, crest, or trade-mark put on the glass by an improved acid process, at from 1s. to 2s. per gross. There is a three-fold advantage in this, as it forms a continual advertisement, is a great ornament, and a preventive of fraud. The plate for engraving costs extra from 5s. upwards, according to the artistic device required.

PRICES (WHITE, BLUE, GREEN, OR AMBER) :—

	By the gross, per doz.	Less than 1 gross, per doz.
Quart size	£1 2 0	£1 4 0
Pint size	1 1 0	1 3 0
Half-pint, Pear shape	1 0 0	1 2 0
Octagonal vases, any colour (including Azure Blue)	1 4 0	1 6 0

Tops, nickel-plated, from 5s. 6d. per doz. extra. Tops, silver-plated and burnished from 9s. per doz. extra. A charge is made for packing, except when ordered in our patent bin cases (holding one dozen each, price 2s. 6d. each).

Please Note.—B. & F. are the only firm manufacturing Syphons in England that do not supply them filled, and so compete with their customers' trade.

BARNETT & FOSTER,

MINERAL WATER ENGINEERS,
Manufacturing Chemists, and General Providers for the Aërated Water Wine, Beer, and Cyder Trades.

"Niagara Works," 26^T Eagle Wharf Road, London, N.

Send or Price List of Soda-water Machinery and Accessories.

12½ gals. for £1, Cask free.
SPECIAL LINES FOR CASH BUYERS!!

TYRER'S WORCESTER SAUCE, YORKSHIRE SAUCE, "BOROUGH" KETCHUP. BEST VALUE THAT MONEY CAN PURCHASE.

Prices and Samples sent free of all cost by
PETER TYRER, The "Borough" Ketchup & Sauce Maker,
LONDON, S.E.

TOWER TEA

A SAFE and PROFITABLE addition to a Chemist's Business.



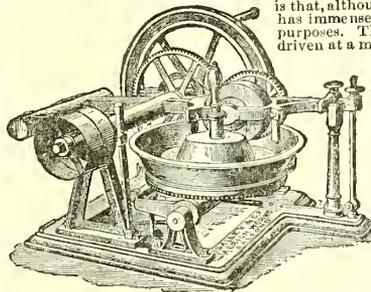
For retail at
The London Broken Tea ... 1/8
The London Two Shilling Tea... 2/-
The London 2/8 Assam Tea... 2/8

For Testimonials and References see the full page Advertisement which appears monthly in this Journal. Last insertion August 28, page vi.

THE GREAT TOWER STREET TEA CO., LIMITED,
LONDON.

BAILEY'S MINTON-WARE BOWL DRUG MILL. (CARR'S PATENT.) FOR HAND OR POWER.

Will reduce Crystals to an impalpable powder. The chief feature of this machine is that, although it can be turned with ease, it has immense frictional power for levigating purposes. This is caused by the runner being driven at a much greater speed than the bowl. Diameter of Bowl, 18 inches.



Price, £11.
Lists, &c., on application.

Mr. J. DUTTON, Rock Ferry, Birkenhead, says—"The Mill you sent me answers admirably for powdering all kinds of Salts, and for many other things, such as Opium, Seamoney, Soap, Almonds, Mace, &c. It also effects a great saving of time and labour in mixing various powders, such as Tooth Powder, Lemon and Kali, &c., and proves a very useful apparatus in the shops."

W. H. BAILEY & CO., ALBION WORKS, Salford, MANCHESTER.

T. & F. J. TAYLOR'S



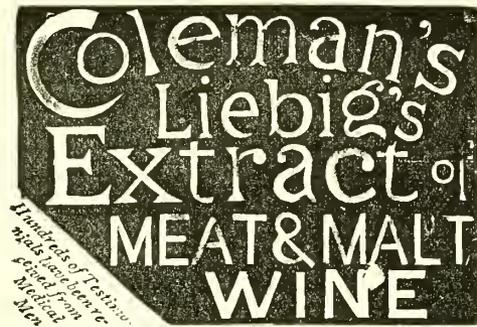
AËRATED WATERS, Newport Pagnel.

ESTABLISHED 1835.

SODA, POTASH, SELTZER, AËRATED (without Alkali), and LITHIA WATERS,
LEMONADE AND GINGER ALE.

Each Bottle is protected by a Label bearing the Signature of the Firm.

Purity and Excellence of the Water certified by Analysis by Professor ATTFIELD, Ph.D., F.C.S.



Is a Delicious Beverage and Tonic made from Port Wine, Liebig's Extract of Meat and Extract of Malt.

**NUTRITIOUS, STRENGTHENING,
STIMULATING,**
Flesh-forming, and Health-restoring.

SUITABLE FOR THE ROBUST IN HEALTH
AS WELL AS THE INVALID.

Important Unsolicited Testimonial from
M. K. HARGREAVES, Esq., M.D.

Wellington House, Bruce Street, Leeds.

Messrs. COLEMAN & Co. January 12, 1885.
Gentlemen,—I received sample bottle of your "Extract of Meat and Malt Wine." I find that it is the same as I used extensively over two years ago, and which I found of so much benefit that I have used it ever since in my practice, and numbers of my patients get it for themselves. I have great confidence in it as a tonic and restorative. It is also very useful in cases of consumption.

I wish you would send me one dozen bottles, and then will send you money by return. You can send it by rail by G.E.R. on to the G.N.R., and then it will come direct to Leeds.

I am, yours truly,

M. K. HARGREAVES, M.D.

Sold by all Druggists, Wine Merchants, and Patent
Medicine Vendors in the United Kingdom, in
Bottles, 2s. 9d. and 4s. 6d. each.

Ask for COLEMAN'S LIEBIG'S EXTRACT OF MEAT AND
MALT WINE, and "see that you get it."

2/9 size, 30s. per doz. 4/6 size, 50s. per doz.

Carriage paid to any Railway Station in Great Britain.

Sample Pint Bottle sent free by Post on receipt of 33 stamps.

The following Preparations have also been introduced
by the Manufacturers:—

Coleman's Liebig's Extract of Meat and Malt Wine
(WITH IRON), in Bottles, 2/9 and 4/6 each.

Coleman's Liebig's Extract of Meat and Malt Wine
(WITH QUININE), in Bottles, 2/9 and 4/6 each.

SOLE MANUFACTURERS—

COLEMAN & CO.,
GILDENGATE ST., NORWICH.

TRADE PRICES ON APPLICATION.

EIGHT PRIZE MEDALS AWARDED.

**GOODALL'S
HOUSEHOLD SPECIALITIES.**

Yorkshire Relish

THE MOST DELICIOUS SAUCE IN THE WORLD.

This cheap and excellent Sauce makes the plainest viands palatable, and the daintiest dishes more delicious. To Chops and Steaks, Fish, &c., it is incomparable. Sold by Grocers, Oilmen, Chemists, &c., in Bottles, 6d., 1s., and 2s. each.

CAUTION.—On each Yorkshire Relish Label is a Willow Pattern Plate and name, GOODALL, BACKHOUSE & Co. No other is genuine.

**Goodall's
Baking Powder**

THE BEST IN THE WORLD.

Makes delicious Puddings without Eggs, Pastry without Butter, and beautiful light Bread without Yeast. In 1d. Packets; 6d., 1s., 2s., and 5s. Tins.

**Goodall's
Quinine Wine**

The best, cheapest, and most agreeable tonic yet introduced. The best remedy known for Indigestion, Loss of Appetite, General Debility, &c. Restores delicate individuals to health and vigour. In Bottles, 6d., 1s., and 2s. each.

**Goodall's
Custard Powder**

For making delicious Custards without Eggs, in less time and at half the price. Unequalled for the purposes intended; will give the utmost satisfaction if the instructions given are implicitly followed. Sold in boxes 2d., 6d., and 1s. each.

**Goodall's
Blanc Mange Powder**

Is acknowledged by all to be the most convenient and economical preparation ever introduced, as, by its use, a most Rich and Delicious Blanc-mange may be produced in a few minutes at a trifling cost, and may be had of various flavours, *i.e.*, Raspberry, Strawberry, Lemon, Almond, and Vanilla. Sold in Packets, 6d. and 1s. each.

**Goodall's
Egg Powder**

Acknowledged to be the only real substitute for eggs yet discovered. Its action on Cakes, Puddings, &c., &c., resembles that of the egg in every particular, enriching them in colour and flavour, rendering them most wholesome and nutritious. One sixpenny tin will go as far as twenty eggs. In 1d. Packets; 6d. and 1s. Tins.

SOLE MANUFACTURERS—

GOODALL, BACKHOUSE & CO.
WHITE HORSE STREET, LEEDS.

A monthly Price List of Druggists' Sundries, Patent Medicines, &c., can be had post free on application.

N.B.—Each Plaster is put up separately in a Handsome Tin Canister.

MENTHOL PLASTER.



Menthol is "a stearoptene obtained by cooling the oil distilled from the fresh herbs, menthæ." "It has the odour and flavour of peppermint, producing warmth on the tongue, or, if air is inhaled, a sensation of coolness."

Applied externally, menthol acts as a rubefacient, and exerts an invaluable medicinal action as well.

Menthol has a soothing, quieting influence upon the motor, sensory, and reflex centres in the brain and spinal cord, and thus lessens irritability.

On account of the transitory effects of the ordinary modes of applying menthol, it is now offered in the form of a plaster. In this it is combined with medicinal gums, and produces an agreeable electric sensation on application. When applied as an external remedy menthol is also a very powerful antispasmodic.

Placed along the spine, menthol plaster allays nervous excitement and tends to produce sleep; it has proved highly useful in spinal irritation. Headaches, whether due to over-work, irritability, excitement, exhaustion, or congestion, are all equally well affected and quickly relieved by a menthol plaster placed either on the forehead or the nape of the neck.

As applied by means of a plaster menthol has probably no equal in its speedy and effectual relief of neuralgic pains. In intercostal, facial, brachial, or other neuralgia, and even placed over the pit of the stomach for gastralgia and gastrodynia, it simply operates like a charm.

It is also useful in cases of irritable heart.

For lumbago, sciatica, "cricks," tic, "stitches," rheumatic pains, and chronic rheumatism, a menthol plaster of liberal size should be applied and worn continuously.

It will always do good in muscular twitchings and cramps, in lameness, soreness, sprains, strains, and stiffness of the joints or muscles.

In painful affections of the thorax, benefit will often be derived by wearing a menthol plaster over the sternum, and another between the shoulder blades.

The menthol plaster is purely medicinal, and affords physicians a perfect means of maintaining the continuous action of one of the most valuable remedies in the Pharmacopœia. Chronic painful affections otherwise only relieved for short intervals are by this plaster kept permanently free from pain.

Whenever for any cause a plaster is required, or when a pain is obstinate and hard to relieve, the menthol plaster will afford a grateful relief by a continuous medication, that is hardly obtainable by any other means.

Note.—If the cloth stick to the plaster, slightly dampen with cold water, when it will come off easily. Keep in a cool place.

The Menthol Plaster is supplied in yard rolls, 7 inches wide, to physicians at 4s. 6d. each, and is also sold by all Chemists in single porous plasters (7 x 5) at 1s. 1½d.

General Wholesale Depôt for the National Plaster Co.:

67 Holborn Viaduct, LONDON, E.C.

PRICES :

Menthol Plasters (with Racks)—

1 Doz.	3 Doz.	
less than 3 doz.	less than 12 doz.	12 doz.
7/9	7/6	7/3 per doz. net.

Without Racks 6d. per doz. less.

Menthol Plaster Rolls—

1 Doz.	3 doz.	6 doz.
less than 3 doz.	less than 6 doz.	less than 9 doz.
42/-	41/-	39/- per doz. net.

SPECIAL TERMS FOR LARGER QUANTITIES.

N.B.—Each Plaster is put up separately in a Handsome Tin Canister.

TRADE "TABLETS" OF "TABLOIDS." MARKS

Under the above titles we introduced, several years since, a variety of compressed drugs, which, after a thorough trial, have been pronounced, both by the Medical Profession and the Medical and Pharmaceutical Press, "Most valuable improvements in pharmacology"; "Infinitely superior to lozenges"; "The most beautiful of all pharmaceutical products of modern times."

They are composed of the pure drug alone, compressed by machinery, which ensures a perfect exactness in weight and form unattainable by any other method.

Those which are intended for local effect, as upon the throat, are compressed hard and dissolve slowly, acting as a concentrated and continuous application, while those intended for internal administration, as Quinine, Cathartics, &c., are compressed lightly and dissolve readily. Their bi-convex form renders them easily swallowed, and acceptable to patients who cannot swallow round pills.

The following list comprises those most in demand, and others will be added when required by the profession.

PRICE LIST.

	Retail.	Per Doz.		Retail.	Per Doz.
Ammon. Bromide, 5 gr. 100 in bottle .....	.....	27/0	Potassium Iodide, 5 gr. 100 in bottle .....	.....	42/0
" " 10 gr. 100 in bottle .....	.....	38/0	*Quinine Bisulphate 1 gr. 100 " .....	.....	24/0
Ammon. Chloride, 3 gr.	1/0	8/0	* " " 2 gr. 100 " .....	.....	40/0
" " 3 gr.	2/0	15/0	* " " 3 gr. 100 " .....	.....	54/0
" " 3 gr. 100 in bottle .....	.....	22/0	* " " 5 gr. 100 " .....	.....	84/0
" " 5 gr. 100 " .....	.....	24/0	Rhubarb Comp. 3 gr. ....	.....	24/0
" " 10 gr. 100 " .....	.....	34/0	Soda Bicarbonate 5 gr.	1/0	8/0
Ammon. Chlor. with			" " 5 gr.	2/0	15/0
Borax 100 " .....	.....	30/0	" " 5 gr. 100 in bottle.....	3/0	22/0
Bismuth Sub-nit., 5 gr. 100 " .....	.....	38/0	Soda Chlorate ... 5 gr.	1/0	8/6
" " 10 gr. 100 " .....	.....	47/0	" " ... 5 gr.	2/0	16/6
Caffeine Cit..... 1 gr. 100 " .....	.....	42/0	" " ... 5 gr. 100 in bottle.....	3/0	27/0
Cathartic Comp., U.S.P. 100 " .....	.....	24/0	Soda Chlor. with		
Cinchonidia			Borax 5 gr.	1/0	8/6
Salicylate, 2 gr. 100 " .....	.....	90/0	" " " 5 gr.	2/0	16/6
Ipecac. and Opium ... 100 " .....	.....	38/0	" " " 5 gr. 100 in bottle.....	3/0	27/0
Ipecac. Powd..... 100 " .....	.....	27/0	Soda-Mint (or Neutralising Tablets)	1/0	8/0
Laxative Vegetable ... 100 " .....	.....	24/0	" " "	2/0	15/0
Lithia Carbonate, 2 gr. 100 " .....	.....	42/0	" " "	3/0	22/0
Mangan. Bin-oxide 2gr. ....	.....	36/0	Soda Salicylate ... 3 gr. 100 in bottle.....	.....	38/0
Pepsin Saccharated, 5gr. 100 " .....	.....	48/0	" " ... 5 gr. 100 " .....	.....	47/0
Peptonic	2/6	20/0	Soda Sulpho-carbolate		
"	4/0	36/0	5 gr. 100 " .....	.....	47/0
"	7/0	66/0	Sodium Bromide 5 gr. 100 " .....	.....	38/0
Potash Bicarbonate, 5 gr.	1/0	8/0	" " 10 gr. 100 " .....	.....	47/0
" " 5 gr.	2/0	15/0	Sodium Iodide ... 5 gr. 100 " .....	.....	52/0
" " 5 gr. 100 in bottle.....	3/0	22/0	Tincture Strophanthus (c. Sacch. Lactis 1 gr.) 2 minims		
Potash Chlorate ... 5 gr.	1/0	7/6	Test Tablets .....	.....	22/0
" " ... 5 gr.	2/0	14/0	Tonic, Ferri Pyrophos, 2 gr. ....	.....
Potash Chlor. (2½ gr.) with Borax (2½ gr.)	1/0	7/6	" Quinine, 1 gr. ....	.....
" " " " "	2/0	14/0	" Strychnia Phos. $\frac{1}{100}$ gr. ....	.....
Potash Nit.			Urethane	5 gr. 25 in bottle.....	27/0
(Sal. Prun.) 5 gr. 100 in bottle.....	.....	27/0	"	100 "	87/0
Potash Permanganate 1 gr. 100 in bottle.....	.....	24/0			
" " 2 gr. 100 " .....	.....	36/0			
Potassium Bromide 5 gr. 100 " .....	.....	27/0			
" " 10 gr. 100 " .....	.....	38/0			

* Subject to fluctuations of the Market.

Put up in Bottles and Boxes containing from 25 to 100 each, and supplied by most Chemists, and Wholesale to the Trade generally by

BURROUGHS, WELLCOME & CO., Snow Hill Buildings, London, E.C.

Facts about Malt Extracts.

KEPLER SOLUTION OF OIL IN MALT.

"An ideal form for administration of fat."
—BRITISH MEDICAL JOURNAL.

A QUESTION.

There are almost as many grades of liquid malt in the market as there are variations in vernal hues. Some of them are made in America and sent over here, and some are made in Germany. The Kepler Extract of Malt is made in England.

As malt extracts are made in divers ways, and from no end of things, a question may exist in the minds of a few as to what constitutes the really best material from which to prepare an extract of malt.

ANSWER FROM AUTHORITIES.

"Any of the cereals may be employed in the preparation of malt, but barley is preferred for this purpose, because experience has demonstrated that it yields the greatest percentage of diastase" (Musspratt, Vol. I.).

"Other grains, such as wheat, oats, rye, and even Indian corn, may be malted, but experience has shown that barley is the grain best adapted to this process. It yields the largest quantity of diastase" (*Miller's Chemistry*).

"In the manufacture of malt, those grains only are used in which, during germination, diastase is developed, and among these barley takes the first rank." (Birsch.)

The Kepler Malt is prepared from barley only.

BARLEY.

The absolute superiority of Barley for the purpose mentioned has been recognised for ages, and latterly scientifically explained. This grain, by its very structure alone, is in every way peculiarly adapted for making a valuable diastatic Malt Extract. This is by reason of its husks, which preserve the acrospire safe in germination from the danger of blight. (It will be recollected that to make a diastatic malt germination of the barley is first started, and then quickly checked to preserve the ferment.)

As barley contains a great abundance of "force-producers" and "tissue-formers," and phosphates as well, when all these are properly extracted the product is a superlative food for delicate stomachs and an admirable diastatic digestive. The incomparable values of a perfect extract of malt are admitted everywhere. In manufacturing the Kepler Malt Extract nothing is spared to obtain the most perfect article possible, and *it is in this preparation that we have dissolved the Kepler Cod Liver Oil.*

A DISCLAIMER.

It has recently been disclaimed that cod liver oil is soluble in a certain liquid malt, and the observations made on that score seem unquestionably correct. *We have never ourselves dissolved cod liver oil in any malt preparation except one, and that is the "Kepler Extract of Malt."* We accordingly hasten to correct the impression, if such there be, that any but ourselves have claimed to dissolve cod liver oil in malt extract. To us alone the credit of this new discovery justly belongs.

SCIENTIFIC OPINION.

Fat is in a moleculer condition in the body; why may it not be so outside of the body? According to all known methods of determination, cod liver oil is unequivocally dissolved in the newly discovered "Kepler Solution." Those most competent to express a reliable scientific opinion state positively that such is assuredly the case. Every possibility of error has been taken into account, and the fact that in the Kepler Extract of Malt cod liver oil has been dissolved is absolute.

This oil then is dissolved in a malt extract made from barley and not from "wheat, oats, rye and Indian corn." As Sir Wm. Roberts says:—"In malted barley we have at command an unlimited supply of diastatic power." The Kepler Extract contains no glucose nor similar adulterants. The aim is to make it as pure as possible, and from the very best and most suitable material that can be procured.

BAD CONSEQUENCES.

A poor malt extract may occasion an acid state of the stomach, with consequent closure of the pylorus, giving rise to pain and no end of bad symptoms, while oil as commonly given may cause nausea, distress, and vomiting, and "acid or acrid eructations, exciting irritation in the throat and fauces." Whenever these symptoms are produced, the comfort and welfare of patients are certainly interfered with materially. Properly prepared, a malt extract is a delicious food which will not offend the stomach in any way, for it is demulcent, digestive, soluble, and most assimilable. The same may be said of cod liver oil when it is dissolved in such a food as the Kepler Malt Extract. The Kepler Solution is as pleasant as fresh sweet cream, and is liked immensely by invalids, the aged, and infants. "It is the most palatable and easily digested of any form of cod liver oil" (*Med. Times and Gazette*). Highest authorities state that greater benefits will accrue from one pound of the "Kepler Solution" than from five pounds of cod liver oil given in any other form. "Many could take it easily who cannot take the oil" (*Lancet*).

BURROUGHS, WELLCOME & Co.

SNOW HILL BUILDINGS, LONDON, E.C.

WE ARE NOW ADVERTISING EXTENSIVELY

PETROLEUM "WHITE VASELINE" JELLY.

In Collapsible Tubes, 8d. ... 5/ per dozen. Ditto, Perfumed, 9d. ... 6/ per dozen.
 ,, 2-oz. Bottles, 1/ ... 8/ ,, ,, 1/ ... 8/6 ,,
 ,, 5-oz. ,, 2/ ... 15/ ,, ,, 2/ ... 16/ ,,

The Bottles are put up in Cardboard Cases, the same as "Vaseline" No. 1 and No. 2 sizes.

Also "VASELINE OIL" (Perfumed) for the Hair, 1s. bots., 8s. per doz.

CHESEBROUGH MANUFACTURING CO., 41 Holborn Viaduct, LONDON, E.C.,
 Proprietors and Sole Manufacturers of the "VASELINE" Preparations.

LANOLINE (LIEBREICH).

THE NEWLY-DISCOVERED BASIS FOR OINTMENTS.

ITS PROPERTIES.

1. It is a fat natural to the hair and skin.
2. It is of desirable consistence.
3. It does not melt below body heat.
4. It does not "run."
5. It is homogeneous, and free from crystalline bodies.
6. It does not contain glycerine or free fatty acids.
7. It is neutral, and never turns rancid.
8. It is wonderfully miscible with water.
9. It is receptive of all medicaments indifferently.
10. It is perfectly preservable.
11. It does not irritate, but tones the skin.
12. It is absorbed by the skin at once.
13. It is slightly tenacious and adhesive.
14. It is perfectly bland and soothing.

Samples for trial, with pamphlet containing full information, supplied to the profession, post free, upon request.

BURROUGHS, WELLCOME & CO., Snow Hill Buildings, LONDON, E.C.

 **EIGHT INJUNCTIONS** have been granted during the past few months.

 **CAUTION! "YORKSHIRE RELISH."** 

NOTICE IS HEREBY GIVEN that in several actions instituted by Messrs. GOODALL, BACKHOUSE & CO., of LEEDS, Injunctions have been recently granted by Judges of the Chancery Division of the High Court of Judicature, restraining several persons from using several Counterfeits of Messrs. GOODALL, BACKHOUSE & Co.'s Labels, and in particular against the use of the words "YORKSHIRE RELISH." The sole and exclusive right to the use of which words having been finally established by the above Firm, they will take immediate proceedings against parties manufacturing or offering for sale Sauce under the above title, not being of the manufacture of Messrs. GOODALL, BACKHOUSE & Co.

Information may be given to the undersigned,

J. SEYMOUR SALAMAN,
 12 KING STREET, CHEAPSIDE, LONDON,
 Solicitor to the Trade Mark Protection Society.

J. F. MACFARLAN & CO.,

MANUFACTURERS OF

MORPHIA AND ITS SALTS,

AND ALL PRODUCTS FROM OPIUM.

PURE CHLOROFORM,

ANSWERING ALL THE TESTS OF THE BRITISH PHARMACOPŒIA.

ALSO, ANÆSTHETIC ETHER, ALOIN, BEBEERIN, CHRYSOPHANIC ACID, SALICIN

MAY BE HAD FROM ALL THE WHOLESALE HOUSES, AND AT

17 NORTH BRIDGE, EDINBURGH, AND 71 COLEMAN STREET, LONDON.



ESTABLISHED 1859.

PRINCIPAL OFFICE, 42 CANNON STREET, LONDON, E.O.

BRANCH OFFICES :

NORMANBY CHAMBERS, MELBOURNE,

AND

41 TEMPLE COURT, NEW YORK.

*Published every Saturday.***Subscription 10s. per year, payable in advance ;
commencing from any date.**

Post free to every country in the world. Single copies, 4d. each.

Supplied only to persons connected with the Trade.

For Australasian subscribers the subsidiary journal THE CHEMIST AND DRUGGIST OF AUSTRALASIA is included.

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EDUCATIONAL.

THIS week a large portion of our space is devoted to educational matters. This year we include special articles in all departments which will interest pharmacists, both young and old ; there is also a large mass of information on the details of education and examinations, which will be of assistance to those who are on the outlook for such information. Our advertisement pages are also largely devoted to educational matters.

SHOP HOURS REGULATION BILL.—The following clause, which occurs in Sir J. Lubbock's Bill, printed and issued to members this week, is of interest to the trade :—

A pharmaceutical chemist or chemist and druggist shall not be liable to any fine under this Act for supplying medicines, drugs, or medical appliances after the hour appointed by this Act or by an order made thereunder for the closing of shops ; but this section shall not be deemed to authorise a pharmaceutical chemist or chemist and druggist to keep open shop after the said hour.

The provisions of the second clause of the Bill are to ensure that all shops, saving

Premises in which any intoxicating liquor is sold by retail for consumption on the premises, refreshment houses, tobacconists' shops, and news-agencies,

shall close every night of the week at 8 o'clock, except on Saturdays or days preceding a holiday, when they will be allowed to keep open until 10 o'clock. It will be noticed that chemists must also close at these hours. The Bill also brings into prominence an Act passed in the reign of Charles II, "for the better observance of the Lord's day."

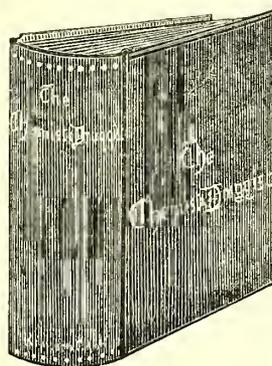
In this it is provided that any person above fourteen years of age who "shall do or exercise any worldly labour, business, &c.," on that day will be liable to a fine of 5s. The new Bill makes the fine 1*l*. Happily there is a saving clause in the Bill which permits local authorities to allow classes of shops not mentioned in the schedule to remain open later than the hours specified in the Act, and permits them also to sanction a weekly half-holiday. There is no hope for the Bill this Session, but we shall hear more of it in the next.

THE BOARD OF TRADE JOURNAL.—During the week the first copies of this journal have been issued. The journal is likely to prove of great value to men of business, as it gives the latest commercial information from consuls abroad, as well as extracts from foreign official journals on trade matters. The nature of the information may be judged from the following list of the contents of the first number :—Recent Changes in the Tariffs of Seven Countries ; Proposed Changes in the Tariffs of Six Countries ; Decisions affecting the Application of Customs Tariffs in Russia, Italy, and the United States ; Conventional Tariff of Roumania, and about twenty-five pages of valuable information on Trade and Industry.

In our Market Report will be found the latest information, derived from this source, on the Norway Cod Fishings.

STUDENTS will do well to study carefully Mr. Moss's report of the last competition on page 364. The failure of some to detect arsenious anhydride by precipitation with sulphuretted hydrogen is a common experience in the examination room, but the remarkable thing in the present case is that a careful preliminary examination of the mixture in the dry way would have demonstrated the presence of all the bases which were in the mixture.

WE append a sketch of the reading case which we are now supplying. It is in black cloth with gilt letters. In it a quarter's copies of THE CHEMIST AND DRUGGIST can



be conveniently kept. We sell it for 1*s.*, delivered free to any City house (we cannot deliver beyond the City), or we send it by parcels post for 1*s.* 3*d.*

A PILULAR ARRANGEMENT.—Everything has its comic side ; and so, therefore, has the architecture of the Holloway College. Strange as it may seem, pills are the favourite form of ornamentation within and without the college. The first and last thing that one discovers in the distant view of the building is the gilded pill carried by the lightning-conductor at the apex. As one gets closer one finds pills stuck about everywhere. At the principal gateway a gigantic pill seems struggling out of its box at the top of each gate-post ; and as one stands in the stalls of the chapel, one's hand involuntarily rests on a bolus. Perhaps, however, this is unintentional. "If you leave out a wart or a sear, I won't pay you a shilling," Cromwell is reported to have said to Cooper when drawing his portrait. Now, the late Mr. Holloway, among his other virtues, was credited with a similar sort of truthfulness. Can the pills on his college have been the result of an injunction to his architect ?—*The Artist.*

Metropolitan Reports.

APPLICATION FOR THE COMMITTAL OF A CHEMIST.—On September 11, in the City of London Court, before Mr. O. B. C. Harrison, the deputy-judge, the case of Pensconate v. Stevenson was heard, being an application for the committal of the defendant in default of paying a balance of debt due. His Honour: What is the defendant? Plaintiff: He is a chemist, in Basinghall Street, and lately sold a business at Brixton for 700*l.* His Honour: But has he had the money in his pocket since the date of this judgment? Plaintiff: I know his present shop is close to the court, and that his name is over the door. I have applied to him there, and he professes that the shop does not belong to him. His Honour: That is no evidence of means. Who gave you all this information about the defendant? Plaintiff: My solicitor. His Honour: That will not do. Plaintiff: Well, he has a house at Norwood, and I live close to him. His Honour: How do you know he is not a lodger merely? Plaintiff: I believe it belongs to him. The Registrar: If so why not issue an execution? Plaintiff: Probably the furniture is covered by a bill of sale. His Honour: Oh! I can't make any order.

LONDON HOMŒOPATHIC HOSPITAL.—A fine art distribution in connection with a bazaar in aid of the funds for opening a new ward at this hospital, Great Ormond Street, is in course of organisation. Gifts of works of art suitable for prizes are requested.

Provincial Reports.

Items of news, and newspapers containing matters of interest to the trade, sent to the Editor, will much oblige.

BIRMINGHAM.

THE "PRIESTLEY SCHOLARSHIP" has this year been awarded to Mr. H. Holbeche, a student of the Midland Institute, and a pupil of Mr. George E. Perry, pharmaceutical chemist, Hagley Road, Edgbaston. This scholarship is of the value of 50*l.* per annum tenable for two years, and entitles the holder to free instruction in chemistry, &c., during that period at some college or school approved by the Science and Art Department.

STEALING VARNISH.—At the Police Court on Monday, Benjamin Brooks, a gas-tarrer, was ordered a three months' change of scene for stealing twenty-four gallons of varnish, of the value of 18*s.*, the property of Thomas Clayton, Adderley Road, Saltley.

ON THE WANE.—The report of the directors of the Birmingham Household Supply Association (Limited) states that the result of the trading operations for the financial year just closed compares unfavourably with recent years, and the available balance is consequently much less. The applications for shares were greatly in excess of those at the disposal of the directors. There is an available balance of 792*l.* 2*s.* 4*d.*, and the directors recommend that it be disposed of as follows:—To payment of a dividend upon the ordinary shares of the company at the rate of 5 per cent. per annum, 407*l.* 3*s.*; to payment of a special bonus upon purchases by shareholders throughout the year at the rate of 3*d.* in the pound, 300*l.*; carrying forward 84*l.* 19*s.* 4*d.* The association has several medical men amongst its shareholders, and during its existence has helped to cut up the drug trade to some extent. Just now chemists of the town are having a quiet smile all to themselves.

PRESCRIBING CHEMISTS.—The Coroner (Mr. Hawkes) held an inquest at his Court, Moor Street, on the body of William Henry Griffiths, 4 months, 38 Court, Brearley Street, who died on the 12th inst. From the evidence it appeared that on Saturday last deceased was attacked with diarrhoea, and the mother consulted a chemist and got a bottle of white chalk mixture from him, which did no good, and as the child did not make any progress she took it to Mr. Prosser's

surgery on Sunday morning. The child died the same night. Mr. R. J. Ireland, M.R.C.S., who is at the present time acting for Mr. Prosser, stated that when he saw the child on Sunday morning it was in a dying condition. The Coroner: What was the child suffering from? Witness: Acute diarrhoea, or infantile English cholera. Witness examined the mixture obtained from the chemist, and stated that it was chalk mixture. The Coroner: So, for an acute attack of English cholera, chemists sell chalk mixture. Do you think that would arrest the progress of the case? Witness: I don't think it would. The Coroner, in summing up, strongly deprecated the habit of chemists prescribing in cases of diarrhoea without seeing the patients. The jury found that deceased died from diarrhoea, and expressed an opinion that the practice of chemists prescribing should be condemned. The Coroner said he quite concurred with them on that point.

CARLISLE.

THE POISONING CASE.—Dr. Barnes has received from Dr. Walker, of Newcastle, the public analyst for Carlisle, a letter announcing that his microscopic examination of the ham, which was suspected to be the cause of the mischief in the recent case of the poisoning of a wedding party, has resulted in the discovery of a bacillus which he is now cultivating in different media. This discovery, it is hoped, may lead to a satisfactory elucidation of the mystery. Dr. Barnes had placed himself in communication with the Medical Department before this discovery was made, and he had also sent portions of the ham to Dr. Watson Cheyne and to Professor Greenfield, London, for microscopic examination.

LIVERPOOL.

LIVERPOOL COLLEGE OF CHEMISTRY: VISIT TO CREWE RAILWAY WORKS.—On Thursday last a large number of students from the College of Chemistry, Duke Street, Liverpool, paid a visit to the extensive works of the L. & N. W. Railway Co., at Crewe. The party were under the guidance of Dr. George Tate. The Crewe works cover an area of 116 acres of land, of which 35 acres are covered by buildings and shedding, the whole forming probably the largest manufactory of the kind in the world, and possessing special interest to science students. The principal operation of interest to the visitors was the Bessemer-steel process, which was closely watched through its different stages.

NEW COMMERCIAL BOTANY CLASS AT THE LIVERPOOL UNIVERSITY.—There is now every probability that with the commencement of the autumn term a commercial botany class will be formed, having as its teacher Mr. R. J. Harvey Gibson, M.A., F.R.S.E., who is at present demonstrator of biology in the college. The aim of the class will be to impart a sound knowledge of the nature and the methods of preparation of the principal commercial products of the world which owe their origin directly or indirectly to the vegetable kingdom. The subjects will be discussed under five heads—viz., food material, drugs, clothing, &c., architecture, and general purposes. In regard to the second of these, it is announced that "the characters of the plants employed, and the mode of extraction of the active principles and oils, &c., will be the points more especially dealt with." Of the fifth subject—"general purposes"—it is said that the section "will embrace a discussion of such products as gums, dyes, &c., not conveniently classifiable under any of the other headings." The classes will be held in the evening, and the fees are to be based on a low scale, with the view of securing the attendance of those persons who are most interested in the different subjects, to whom ordinary fees might present a difficulty.

MANCHESTER.

POISONED WITH VERMIN-KILLER.—Last Sunday night a painter named John Sheridan, residing in Middleton, was found by his wife crouching down beside a chair, and complaining of violent pains. On a doctor arriving, he confessed that he had taken a twopenny packet of vermin-killer. All efforts to save his life proved fruitless.

MIDDLESBOROUGH.

NEW SALT DEPOSITS.—In a parliamentary paper recently issued reference is made to a new salt field, which has been discovered on the borders of Yorkshire and Durham, near Middlesborough. The deposit is at a depth from 800 to 1,500 feet below the surface, and is from 80 to 117 feet in thickness. The operations which have been made are confined to pumping down water by bore holes, in order to form brine, which is pumped to the surface and evaporated in open salt pans. Already fourteen bore holes have been sunk into the rock, and eleven of them are at work. The amount of salt produced is 2,000 tons weekly; by the end of this year it is expected to reach 7,000 tons per week. 100,000*l.* has been expended on the concern, and the investment of an additional 50,000*l.* is contemplated.

SLOUGH.

TIRED OF LIFE.—Julia Painting, a respectably dressed young woman, aged 18, was charged before the County Justices at Slough last week with attempting to commit suicide. A constable had discovered her at one o'clock in the morning with a bottle in her hand, which she said contained vitriol, and of which she drank. She was taken to the Windsor Royal Infirmary, and the contents of the bottle were afterwards found to be dilute sulphuric acid. The prisoner was remanded.

WORCESTER.

A NEW DEVELOPMENT.—At the recent licensing sessions an application was made on behalf of the Patent Medicine Drug Stores for a wine and beer license for their shop in Church Street. The application was adjourned for a month.

WIDNES.

ANTICIPATING EVIL.—Owing to a change in the management of the firm of Mort, Liddell & Co., chemical manufacturers, the men in their employment recently struck work. The men give as the reason of the dispute that a Mr. John Dray, who, up to a recent date, was foreman at the Dosoto Alkali Works, has taken most of the work at Messrs. Mort, Liddell & Co.'s by contract, and they are afraid that their wages will be lowered.

WIGAN.

POPPYHEAD TEA.—Last week the Borough Coroner held an inquest on the body of a child, fourteen days old, son of a collier. The child had not been well, and the mother, on the recommendation of a neighbour, infused several poppy-heads and gave the child some of the infusion, as the result of which it died. The post-mortem examination showed that death was due to opium poisoning, and the jury returned a verdict to that effect.

AN OVERDOSE.—A gentleman named William Fox, aged sixty-four, residing at Aspall, near Wigan, died on Sunday from an overdose of laudanum taken to produce sleep; the deceased having suffered from insomnia.

SCOTLAND.

EDINBURGH.

CUTTING.—The cutters here are still pushing business assiduously. One firm has a vehicle perambulating the streets with a large placard displayed bearing an advertisement to the following effect:—"Save your money by buying Patent Medicines, Perfumery, Sponges, Drugs, &c., at ——— & Co.'s, ——— Street"; while quinine is offered in the makers' original 60-grain sealed bottles for *1s.*, post free to the antipodes if necessary. An offshoot from one of the Glasgow firms has been opened, and has issued a price-list, and so keen has the competition become among the cutters themselves, that several leading articles are being sold at extremely low prices, Hop Bitters, for instance, may be had at *2s. 11½d.*

BUSINESS CHANGES.—There has recently been added another to the list of competitors in the drug trade for public favour in Edinburgh, a shop having been opened at 271 Causewayside by Mr. W. K. Mitchell, who formerly essayed business in Juniper Green. The business carried on by Mr. Macintyre, West Port, is reported to have been sold, but the name under which it is to be conducted in the future has not transpired.

AT THE COUNTER.

MESSRS. MAITLAND & Co., Colombo, Ceylon, send us the following orders received by them:—"Please let bearer have an oz. of ebbs and salts, and oblige."—"Please give boy 2 oz. of saults for working purposes."

* *

J. W. B. sends us specimens of counter practice at Stalybridge. One customer puts forth his order carefully, as follows:—

L. s. d.
1½ Can Padries
1½ Coco Oil
1 Perpicite
2 Penny worth Cent Bergemott.

Another asks for "½ oz. of sweet nighter and ½ oz. of khyan pods." Then comes another order for "2 oz. islots sweet hormans and syrup of islots and ½ perry gerry 1 ozs. of best magnishe 3 penny turkey rubarb grui." "A penny Worth of diecklum plaster" is the next requirement, "1 dram of Sulfer heather," "1*l.* of Seutehin Heel," and Ipecacuanha in several new styles are among the remainder.

* *

ALL FOR THE LOVE OF A WOMAN.—An American pharmacist claims to have received the following self-explanatory letter:—"—, ARK., June 14, 1886.—Mr. —: Dear Sir—I will asked you to Sent me ten Cts worth of love Powders this for to Gain the love of a good girl or tell me how to gain the love of a girl or tell me Some good way for to gain the love of a girl As the old Sailing a Fool for luek so hear i try you for infirmachien give me a trile Beshuar and send me some love powders and also tell me how for to yoused them and tell me if thar is aney thing that a man Can make a girl love a man Remain as yours Truly Respectful —."

* *

The following is a West of England production, which is circulated in the form of a handbill:—

The Druggist's Alphabet.

A mmonia is us'd to clean cloth, I dcelare,
B orax for "whitemouth," or wash for the hair,
C armine's a color to paint ladies' faces,
D ragon's Blood also is used by their graces;
E ssences likewise (remember I'm punning),
F lake white, and all of this brings 'em out stunning.
G um is a stieker for paper—I'll back it,
H orse Powders (Hare's), are a shilling a packet;
I nk is a liquid that's often abus'd,
J uniper berries are now seldom us'd,
K eosote sometimes is spelt with a "C,"
L audanum's *pison*, atwixt you and me;
M agnesia's white and manganesebl ack,
N aphtha is us'd for dissolving shellac,
O live oil (best) is a shilling a pound,
P epper's a penny an ounce, whole or ground;
Q uassia's a tonic—destroys flies or wasps,
R otten stone polishes buttons or clasps,
S enna's a useful old purgative, very,
T urmeric's us'd in the making of eurry;
U mber's a color that every one knows,
V ermilion's red, you'll admit I suppose,
W ax is produc'd by the poor little bees,
X tracts all kinds you may get if you please,
Y arrow's a herb to be found in waste grounds,
Z ine Ointment's famous for curing old wounds,
& HARE'S is the shop for a bet of five pounds.

CORNER FOR STUDENTS.

CONDUCTED BY RICHARD J. MOSS, F.C.S.

QUALITATIVE ANALYSIS.

THE subject of the next exercise in qualitative analysis will be a mixture of salts. It is to be submitted to a thorough systematic examination, such as is required to detect all its constituents, and to demonstrate the absence of all other substances. In reporting, students are to give a brief account of the analysis, with a summary of the results obtained, distinguishing, as far as possible, any accidental impurities which may be detected from the chief constituents of the mixture.

Students' applications for a portion of the mixture will be received up to September 24, and the samples will be forwarded on September 30.

Students' reports will be received up to October 16.

REPORTS.

The mixture of salts which formed the subject of the last analytical exercise consisted of:—

Arsenious anhydride	2
Nickel sulphate	10
Potassium alum	30
Ammonium chloride	5

By calculation it will be found that this mixture has the following composition, viz.:—

As	3.23
Ni	4.46
Al	3.70
K	5.24
NH ₄	3.58
SO ₄	33.10
Cl	7.06
O	1.63
H ₂ O	38.60
	100.00

The number of competitors this time is very small; no doubt the holidays have proved a superior attraction, and many a student has been glad to exchange the atmosphere of the laboratory for the invigorating air of the country. It would seem that some of those who have remained at work are sadly in need of a change, for the reports this time are decidedly below the average in accuracy. Six students failed to detect potassium, although the mixture contained more than five per cent. of the metal. Five failed to detect arsenic, and the same number were unsuccessful in the search for aluminium. There were at least two failures in the case of each of the other two constituents. Two students from the same town succeeded, according to their reports, in detecting acetic acid.

Few of the elements have been so thoroughly studied, from an analytical point of view, as arsenic; no doubt because of the frequency with which its compounds, even in small quantities, have been known to cause death, and it is most important to be able to detect it with certainty, and to separate it from all kinds of mixtures. There is no excuse for failure in separating and identifying this element. The detection of arsenic in a mixture such as that which formed the subject of the last exercise is a very simple matter indeed, as it was the only member present of the group precipitated by sulphuretted hydrogen. Where our contributors failed chiefly was in effecting this precipitation. The reagent, on account of its gaseous nature, is a difficult one to employ, but there is one rule which simplifies matters if it is

systematically observed. The gas must be passed through the solution under examination until it is distinctly in excess. The student who has experimented upon the complete precipitation of the heavy metals by means of sulphuretted hydrogen will have no difficulty on this point. Suppose the gas to be allowed to bubble through the liquid for about two minutes, at the rate of about two bubbles per second, and that there is no change of colour, no turbidity or appearance of a precipitate, the operation should be stopped, the mouth of the flask or test-tube closed, and the contents thoroughly shaken. If the liquid is saturated it will be observed on opening the vessel that there is a pressure outwards, and the liquid will smell very strongly of sulphuretted hydrogen. If it is not saturated air will rush into the vessel when it is opened to take the place of the gas absorbed on shaking, and in this case it will be found that there is only a faint smell of sulphuretted hydrogen, if any; more gas must then be passed through the liquid. If a precipitate forms, the same precautions must be taken to ensure that the solution is thoroughly saturated. Some of the sulphides are not readily precipitated from cold solutions, so that it cannot be concluded that there is no precipitate until the saturated solution has been warmed and allowed to stand say for half an hour. It will generally be found convenient to operate on only a small part of the solution to be examined, as it may be very quickly saturated, and the student can be guided by the results obtained in the treatment of the remainder of the solution. If no precipitate forms, or one consisting of sulphur only, then the gas need not be passed through the bulk of the solution, and much time and trouble is saved boiling off the excess of sulphuretted hydrogen preparatory to adding the next group-reagents.

PRIZES.

The First Prize for the best analysis is again awarded to

CHARLES B. GILSON, 39 High Street, Margate.

The Second Prize to

JOHN CHARLES AMES, 28 Park Street, Bristol.

Marks Awarded for Analyses.

C. B. Gilson (first prize) .. 95	J. C. Kidd 40
J. C. Ames (second prize) .. 85	R. P. 35
H. A. Spikins 80	F. E. E. 20
W. C. Marshall 75	P. A. 15
Benedict 60	G. W. B. 10
F. C. J. W. 50	

TO CORRESPONDENTS.

Prizes.—The students to whom prizes are awarded are requested to write at once to the Publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as second prize.

. All communications should include the names and addresses of the writers.

J. C. AMES.—The sublimate obtained on heating a mixture of salts may consist of several substances. You must not, therefore, rest satisfied with showing the presence of some one kind of volatile matter. A great deal of information may be gathered by carefully observing the formation of the sublimate, beginning at a low temperature, and gradually heating the mixture to redness. Cautiously proceeding in this way, it was possible to observe first water, then ammonium chloride, and finally arsenious anhydride.

W. C. MARSHALL.—If the mixture had contained an acetate you ought to have observed an acetous odour when you treated the mixture with sulphuric acid. The test depending upon the production of ethyl acetate is not always satisfactory in inexperienced hands; it is desirable to obtain confirmatory evidence, such as the ferric chloride test affords.

H. A. SPIKINS.—A preliminary examination in the dry way would have increased the value of your results. See remarks to W. C. Marshall.

BENEDICT.—Considering the method which you employed, your results are not bad. You must proceed in a more systematic way, employing the group reagents in their proper order. Remember that it is just as im-

portant to prove the absence of one substance as the presence of another. Try the analysis of a few mixtures of your own preparation; you will find the work most instructive.

F. C. J. W.—It is not at all clear how or what you tested for potassium; the residue after the separation of the metals and the expulsion of ammoniacal compounds gave distinct indications of the potassium, both by the platonic chloride test and the flame coloration.

J. C. KIDD.—In testing for the metals of the iron group you should always pay particular attention to the effect produced by the addition of ammonium chloride and ammonia; for example, these reagents precipitate iron but not nickel.

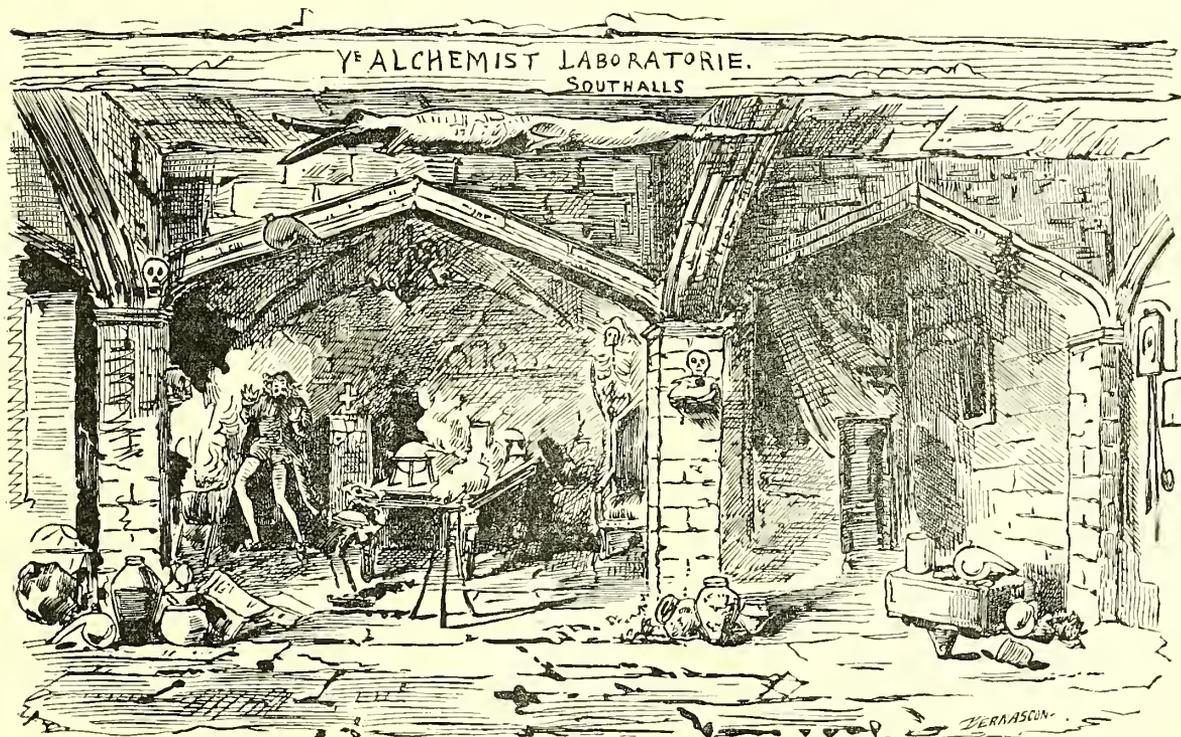
R. P.—One-tenth of the quantity of ammonia present would suffice to give a very distinct and unmistakable reaction by the soda lime test. Try what is the smallest quantity of ammonia you can detect; do not trust to smell alone.

F. E. E.—You are by no means fortunate in your results. It is very

evident that you have not had sufficient experience of the reactions upon which you attempt to base opinions. Every reaction requires to be studied experimentally before attempting to apply it in the examination of a mixture of unknown composition. You cannot expect to know what you are to observe without having yourself seen the effects which reagents produce. Mere reading about tests will not suffice; you must try them in order to understand them.

P. A.—You made a bad guess. Chemical analysis admits of no uncertainty; your results should be sharp and conclusive.

G. W. B.—It is difficult to believe that the tests which you describe were really applied to the mixture sent to you with the results stated in your report. If it is indeed so hard to observe even the simplest phenomena in nature, how difficult must it be to study complex phenomena, and to arrive at anything like correct results! From the particulars given above, you will have no difficulty in preparing a mixture precisely the same as that sent to you, and it would be well worth while to repeat your experiments with such a mixture, and see if you get the same results again.



THE ALCHEMIST'S LABORATORY, BINGLEY HALL, BIRMINGHAM.

ABOVE is a faithful representation of the alchemist's laboratory, of which we gave a full description in our last issue. Our sketch is from an original drawing specially made for us by Mr. Bernasconi, the gentleman who arranged the mystic cell, and who periodically gave representations of the

alchemist at work. These representations have been such a great success that they caused quite a congestion of traffic in the vicinity on Saturday last, and the authorities have become alarmed as to their capabilities of managing the crowd.

RECENT WILLS.

THE will of the late Mr. George Mager, of the firm of Stephenson & Mager, blue manufacturers, King's Cross, has been proved at upwards of 80,000*l.* Mr. Mager has bequeathed 200*l.* to be divided amongst the old employés of the firm.

THE will and codicil of Mr. Alfred Batty, late of 37, Mincing Lane, chemical broker, and of 37 Westmoreland Road, Westbourne Grove, who died on August 13, were proved on August 25 by Mr. Charles Batty, the father, and Mr. Charles Batty, junr., the brother, the executors, the value of the personal estate exceeding 8,000*l.* The bulk of the property is left upon trust to the testator's father, sister, and brother.

THE will of Mr. John Case, late of 5 Dockhead, Bermondsey, spice grinder and ginger bleacher, who died on

August 3, at Weymouth, was proved on August 20 by Mr. William Thomas and Mr. Charles Evelyn, Wellborne, two of the executors, the value of the personal estate amounting to over 29,000*l.* The testator's business is to be carried on until his son John attains the age of twenty-one, and he then gives him the lease, good-will, plant, machinery, horses and carts, and 1,500*l.* for capital. The residue of his property is to be held upon trust for his wife for life, and then for his said son.

FROM LIFE.—Patient: "Besides a headache, I don't seem to ail anything. I eat like a wolf, work like a horse, am as tired as a dog when evening comes, and at night I sleep as sound as a rat." Doctor: "Humph, hadn't you better see a veterinary surgeon?"

EDUCATIONAL INFORMATION.

PHARMACEUTICAL EDUCATION AND QUALIFICATIONS.

GREAT BRITAIN.

THE nightmare which, in the shape of a proposed compulsory curriculum, has troubled the unqualified votaries of pharmacy during the past few years, has now vanished from their dreams, to return in the future in some other form, perhaps, but not until the slow machinery of Imperial Parliament gives the Pharmaceutical Council power to carry out their wishes for making the drug trade a select profession. The prospects of restrictive legislation in the future need not trouble those whom we now address, as the rights of those who may be actually engaged in pharmacy, when more stringent laws may be enforced, will be amply protected.

PRELIMINARY TRAINING.

The first duty of a youth who desires to become a pharmacist is to acquaint himself with the educational requirements demanded of him. He must have a fair education. The Pharmaceutical Society requires that he should pass an examination in arithmetic, English, and Latin, before he proceeds to the Minor, or qualifying examination. He may pass this first, or Preliminary examination, at any time prior or subsequent to commencing work as a pupil. Obviously, it is a great advantage to a lad to begin pharmaceutical work perfectly unfettered, and for this reason we strongly advise all youths who are destined to be pharmacists to pass the Preliminary examination before leaving school. If he has been taught other subjects, such as mathematics, Greek, or a modern language, instead of entering for the Preliminary examination of the Pharmaceutical Society, he should endeavour to pass part of some examination recognised by the General Medical Council as qualifying for registration as a medical student, or by any examining body which gives a degree in science. The object of this is twofold; first, the certificate entitles him, provided he has passed in arithmetic, English, and Latin, to registration as an apprentice or student of pharmacy, on payment of a fee; and second, should he at any future time desire to leave pharmacy for medicine, or wish to graduate in science, the subjects of the examination which he has passed will stand to his credit, and he will be saved the drudgery of going over them again when his mind is better fitted for other work. If the youth does not succeed in getting through the examination before he is apprenticed, he should endeavour to pass as soon after as possible. As to apprenticeship, the custom differs somewhat in the two countries. In England it is customary for the apprentice to pay a premium to his employer, be indentured to him, and live with him during pupilage, which lasts from three to five years. In Scotland premiums are unknown, and indentures are rare. The apprentice goes to business in the morning, and returns home to meals and after business, and receives a salary for his services. There, also, in university towns, employers generally allow apprentices time for classes. During apprenticeship no opportunity should be lost of acquiring some knowledge of the more scientific subjects which pertain to pharmacy, such as botany and chemistry. In most important towns in Great Britain there are educational facilities, and evening science classes, conducted according to the South Kensington scheme, are common. These afford a cheap and generally efficient means of gaining an acquaintance with the rudiments of science. Of these classes it is sufficient to take two in the first winter, say, inorganic chemistry and acoustics, light and heat, or magnetism and electricity. The latter courses reveal, more intimately than chemistry, the nature and opera-

tions of physical laws, and greatly assist the student in his chemical studies. A full account of what it is possible to do during apprenticeship is beyond the scope of these notes, but we would strongly impress upon all to make the most of what opportunities may be near them for acquiring the knowledge required for the Minor examination. But a pharmacist is not made by studying the sciences. The apprentice should take an intelligent interest in shop work. Whether he is bottling castor-oil or making a difficult pill-mass, the operations should be performed carefully and intelligently. He should try to acquaint himself with the history of drugs, their preparations, and their uses, and should keep notes of extraordinary prescriptions, doses, &c., which he may come across in his work. All these things help greatly to smooth the way of preparation for the Minor examination, which is to put him on an equal footing with his employer, so far as the law is concerned.

MINOR OR QUALIFYING EXAMINATION.

This examination is, in reality, a test of how candidates have employed their time during their apprenticeship. Only those who have "for three years been practically engaged in the translation and dispensing of prescriptions," and who have attained the full age of twenty-one, can enter for it. The subjects of the examination are botany, chemistry, dispensing, materia medica, pharmacy, and prescription-reading. The examination is held six times yearly in London, and four times in Edinburgh, by boards appointed by the Pharmaceutical Society. Though both boards are perfectly distinct from each other, every means is taken to make the examinations identical in scope, and the fact that the failures before both boards are proportionately about equal seems to show that there is little to choose between them. The examination is oral, and follows in lines somewhat like the following:—

Botany.—Dried and fresh specimens are submitted to the candidate, and he is expected to recognise and name those which are pharmacopœial, or which may be commonly known as medicinal plants. Stems, roots, bulbs, and other similar parts of plants are shown to him, and he is expected to describe their structure and give the technical names of the whole or parts thereof. Generally, the examiner uses the specimens upon the table as a hinge for questions within the scope of the regulations. Consequently, practical work in the garden or the field is excellent preparation, and should by no means be neglected.

Chemistry.—This follows the lines of the botanical examination, that is to say, the candidate is generally asked to do practical work, and the examiner plies him with a volley of questions afterwards. He may calculate upon having to identify and test all B.P. chemicals and common ones outside it; he will not get the whole, but he may get any of them. Then he is asked how they are prepared, the decompositions which occur in their preparation, and so on, such questioning giving the examiner the opportunity of diverging into the properties of the bodies, and of ascertaining whether the candidate understands what he speaks about, or has merely got it up by rote. Following this, or preceding it, as the case may be, simple questions are given in physics, limited to the barometer, thermometer, hydrometer, and other means of ascertaining specific gravity.

Dispensing occupies at least an hour of the examination. A prescription containing at least two forms of medicinal preparations is given to dispense. One man may get a mixture and a box of pills, another a lotion and an ointment, and so on. Generally prescriptions containing plasters, or suppositories, are floating about, and as they frequently are a crucial trial of strength, the candidate should be well practised in their preparation. Dispatch is an important thing in this department, but not nearly so important as careful manipulation and neatness. A carefully-prepared mixture, well-formed pill, and neatly-written label always take the rough edge off the poor opinion formed of the slow man. At

the worst it should be remembered that the prescriptions given would seldom take more than twenty to thirty minutes to dispense on ordinary occasions. In Edinburgh one hour is allowed for this subject.

Materia Medica comprises the recognition of pharmaceutical medicinal substances and their substitutes or adulterations. In addition to knowledge of the source, &c., the candidate should know what their medicinal properties are due to. For example, it is well for him to know that nux vomica contains two alkaloids, brucine and strychnine, the glucoside loganin and a peculiar acid, igasuric acid, with which the bases are combined in the drug. We do not say that the candidate is expected to know *all* the principles which exist in drugs, but it is better that he should know the more active or more noteworthy of them, and this is recognised in the information given in text-books and by teachers.

Pharmacy.—This is one of the most important subjects of the examination, and the one which brings out, more than any other, what the habits of the candidate have been during apprenticeship. If he has prepared tinctures, pills, and other pharmaceutical preparations, and put some intelligence and observation into his work, the knowledge acquired will come back to him and stand him in good stead at the examination table. Here he will find an array of specimens—tinctures, ointments, liquors, syrups, pill-masses, liniments, &c.—which he is expected to recognise. Generally, easily-recognisable ones are given to him, some are more difficult to recognise, but recognition is not the end of the specimens, for they are upon the table for the purpose of questioning the candidate upon the ingredients and means employed in their preparation, their strength, &c. Then follow questions on allied subjects, such as weights and measures, pharmaceutical operations, and what we may call theoretical dispensing, that is, how to form pills, emulsions, &c.

Prescription Reading.—This brings out what little knowledge of Latin remains in the candidate. He has to read out in Latin, or in English, as the case may be, ordinary prescriptions, and write out in Latin, without abbreviation, a test prescription. An immense volume of prescriptions from all shades of physicians enables the examiner to ascertain the candidate's knowledge of doses generally. Physicians are fallible and make slips; the candidate is expected to detect these when they occur in any prescription, and the opportunity is taken to question him in official doses, as well as those uncommon doses which one sometimes comes across.

By the time the candidate has finished all the subjects (he may begin with any one of them, just as a vacancy occurs), three or four hours have elapsed, and he is allowed to go. In Edinburgh he is told at once whether he has passed or failed, but in London, unless he breaks down on a subject, it is the next day before he learns his fate, and if success has awarded his efforts, he may henceforth open shop, sell poisons, and call himself chemist and druggist, or any other title which does not encroach upon that which the higher or Major examination confers, viz. pharmaceutical chemist.

MAJOR EXAMINATION.

Quite recently two successful candidates have recorded their experience of this examination in *THE CHEMIST AND DRUGGIST* (August 21, page 228), and we need only refer to it briefly. It comprises two days' work; the first day is wholly devoted to practical chemistry, the next to botany, chemistry and physics, and *materia medica*. Pharmaceutical chemists are exempted from service on juries (in England and Wales only, not in Scotland), otherwise the Major confers no public privileges further than are enjoyed through the Minor examination. But Major men are supposed to be the superior men of the trade, and if they are members of the Pharmaceutical Society, which they can be on payment of a guinea annually, they are liable at any time to be made members of the Council of the Society (if they have supporters enough), and a fortunate few of them are appointed examiners, which office carries with it considerable weight as a position of honour, together with a fee of three guineas a day and expenses. Some say that the game is not worth the candle, that the drug trade is not good enough for all the trouble required before the Preliminary and Minor examinations are passed, and many of those grumblers manage to keep in the business and make a living without undergoing the examinations. But to be good citizens and druggists at

the same time, the examinations must be passed. The end is not in the examination, for the knowledge acquired is excellent business capital, upon which as tangible a return will be acquired as from the best-secured money investments.

The following is a copy of the official regulations as issued by the Secretary of the Pharmaceutical Society.

REGULATIONS OF THE BOARDS OF EXAMINERS OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

FIRST OR PRELIMINARY EXAMINATION.

This examination is held at the following centres throughout Great Britain, at 11 A.M., on the second Tuesdays in January, April, July, and October:—Aberdeen, Birmingham, Brighton, Bristol, Cambridge, Canterbury, Cardiff, Carlisle, Carmarthen, Carnarvon, Cheltenham, Darlington, Douglas, (Isle of Man), Dundee, Edinburgh, Exeter, Glasgow, Guernsey, Hull, Inverness, Jersey, Lancaster, Leeds, Lincoln, Liverpool, London, Manchester, Newcastle, Northampton, Norwich, Nottingham, Oxford, Peterborough, Sheffield, Shrewsbury, Southampton, Truro, Worcester, York.

Candidates must give notice to the Registrar on a printed form to be obtained from him, and pay the fee not less than fourteen days prior to that on which the examination is to be held. The examination is wholly in writing, and comprises:—

Latin.—Grammar, translation of simple sentences from English into Latin; translation into English of a paragraph from Cæsar, "De Bello Gallico," Book I., or Virgil, "Æneid," Book I. In each examination paper a passage from both of these authors is given, but a candidate is required to translate one only of such passages.

Arithmetic.—The first four rules, simple and compound, vulgar fractions and decimals, simple and compound proportion, a thorough knowledge of the British and metrical systems of weights and measures.

English.—Grammar and composition.

In awarding marks, spelling and the quality of the handwriting are taken into account. The time allowed for each subject is an hour and a half.

A certificate of having passed any of the following examinations will be accepted in lieu of the Preliminary examination, provided that Latin, arithmetic, and English be included in the subjects of the examination for which the certificate has been granted:—Local and higher examinations of the Universities of Oxford, Cambridge, Durham, Edinburgh, Aberdeen, Glasgow, St. Andrew's, and Queen's University in Ireland; also the Matriculation and Preliminary examinations of these and the following:—University of London, Victoria University, University of Dublin, Royal University of Ireland, Royal College of Surgeons of England, Royal Colleges of Physicians and Surgeons of Edinburgh, Faculty of Physicians and Surgeons of Glasgow, Royal College of Surgeons in Ireland, Apothecaries' Hall of Ireland, and Incorporated Law Society. The certificates (first and second class) of the College of Preceptors, Owens College Junior Students' examination, Oxford and Cambridge Schools Examination Board, and of the Apothecaries' Society (London), in arts, are also accepted.

The following are the questions set at the last examination held July 13, 1886:—

LATIN.

(Time allowed—from 11 A.M. to 12.30 P.M.)

I. Translate into English either A. (Cæsar) or B. (Virgil)

(Candidates must not attempt both.)

A. CÆSAR.

1. His rebus adducti, et auctoritate Orgetorigis permoti *constituerunt*, ea, quæ ad proficiscendum pertinerent, comparare; jumentorum et carrorum quam maximum numerum coëmere; sementes quam maximas facere, ut in itinere copia frumenti *suppeteret*; cum proximis civitatibus pacem et amicitiam confirmare. Ad eas res conficiendas biennium sibi satis esse duxerunt; in tertium annum profectorem lege confirmant. Ad eas res conficiendas Orgetorigis *deligitur*.

2. Ariovistus ad postulata Cæsar's pauca respondit, de suis viatutibus multa predicavit; transisse Rhenum sese non sua sponte, sed rogatum et accessitum a Gallis, non sine magna

spe magnisque præmiis domum propinquosque reliquisse; sedes habere in Gallia ab ipsis concessas, obsides ipsorum voluntate datos; stipendium capere jure belli, quod victores victis imponere consuerint. Non sese Gallis, sed Gallos sibi bellum intulisse; omnes Gallie civitates ad se oppugnandum venisse, ac contra se castra habuisse; eas omnes copias a se uno proelio pulsas ac superatas esse.

II. Grammatical Questions.

(For those Candidates who take Cæsar.)

1. Decline in full (singular and plural) *sua sponte, magna spe* (Par. 2).
2. Write in full the indicative imperfect and subjunctive pluperfect of the verbs in italics (Par. 1).
3. Parse fully *pauca, rogatum, concessas, quod* (Par. 2).
4. In what case is (a) the *manner*, (b) the *time*, (c) the *place* of an action put? Give *one* example of each.

B. VIRGIL.

1. Sic ait, et dicto citius tumida æquora placat,
Collectasque fugat nubes, solemque *reducit*.
Cymothoë, simul et Triton adnixas, acuto
Detrudunt naves scopulo: levat ipse tridenti;
Et vastas aperit syrtes, et temperat æquor,
Atque rotis summas levibus *perlabitur* undas.
Ac veluti magno in populo quum sæpe coorta est
Seditio, *sævitque* animis ignobile vulgus;
Jamque faces et saxa volant; furor arma ministrat.
2. Qualis in Eurotæ ripis, aut per juga Cynthi
Exercet Diana choros, quam mille secutæ
Hinc atque hinc glomerantur Oreades: illa pharetram
Fert humero, gradiensque deas supereminet omnes;
Latonæ tacitum pertentant gaudia pectus;
Talis erat Dido, talem se læta ferebat
Per medios, instans operi regnisque futuris.
Tum foribus divæ, media testudine templi,
Septa armis solioque alte subnixâ resedit.

II. Grammatical Questions.

(For those Candidates who take Virgil.)

1. Decline in full (singular and plural) *vastas syrtes, ignobile vulgus* (Par. 1).
2. Write in full the indicative imperfect and subjunctive pluperfect of the verbs in italics (Par. 1).
3. Parse fully *quam, pectus, operi, alte* (Par. 2).
4. In what case is (a) the *manner*, (b) the *time*, (c) the *place* of an action put? Give *one* example of each.

* III. (For all Candidates). Translate into Latin:—

1. They had done Cæsar great injury.
2. Give Balbus the book, that he may read it.
3. I have no doubt he will prove to be a great general.
4. He had been carefully taught by all his masters.
5. Having said many things, he went out from the city.

ARITHMETIC.

(Time allowed—from 12.30 p.m. to 2 p.m.)

1. If a person gives 46*l.* 10*s.* for 107 gallons, how much water must he add to it in order to reduce its value to 7*s.* 9*d.* per gallon?
2. If I purchase 17 hogsheads, weighing 14 cwt. each, at 24*l.* per cwt., and am allowed 3 lbs. in every cwt. for waste, for what price must I sell the whole in order to gain 2½*d.* per lb.?
3. Simplify $\{4\frac{1}{12} - (5\frac{1}{7} - 2\frac{2}{3}) + \frac{1}{21}\} \times (\frac{3}{27} + 3\frac{1}{8} + \frac{1}{8})$.
4. If 15 of an estate is worth 560*l.*, find the value of 215 of it.
5. Write down the Metric Table of Weights. A parcel weighs 9 kilog. 40 décag.; what is the value of 125 such parcels, at 1 fr. 75 c. a kilog? (*Answer in francs.*)
6. Find the cost of papering a room 20 ft. long, 16 ft.

* Some candidates have the misfortune to overlook this paragraph. It is generally printed after the passages of Virgil and on a different page from those of Cæsar, consequently they are apt to overlook it. The moral is that candidates should read the whole of the questions before they attempt to answer one of them.

broad, 10 ft. 9 in. high, allowing 120 sq. ft. for doors, windows, &c., with paper ¼ yd. wide, at 4½*d.* a yd.

7. Bought 236 lbs. at 7*s.* 10½*d.* per lb., and sold one-fourth at 10*s.* 3*d.*, one-third at 8*s.* 6*d.*, and the remainder at 7*s.* per lb.; what was the gain or loss upon the whole outlay?

[There is an interval of an hour for lunch, from 2 to 3.]

ENGLISH.

(Time allowed—from 3 p.m. to 4.30 p.m.)

1. Explain the following terms:—*declension, conjugation, prefix, root*. Show how a root may be modified by prefixes.
2. Analyse the following sentence:—

“Around the adjoining brook, that purls along
The vocal grove, now fretting o'er a rock,
Now scarcely moving through a reedy pool,
Now starting to a sudden stream, and now
Gently diffused into a limpid plain,
A various group the herds and flocks compose.”

3. Parse the following sentence:—“England is safe if true within itself.”

4. In the following passage, supply the necessary capital letters, and put in the stops and inverted commas where requisite:—fletcher the divine had a dream which shadowed out his impending dissolution and believing it to be the merciful warning of heaven he sent for a sculptor and ordered his tomb begin your work forthwith he said at parting there is no time to lose and unless the artist had obeyed the admonition death would have proved the quicker workman of the two mozarot wrote his requiem under the conviction that the monument he was raising to his genius would by the power of association prove a universal monument to his remains when life was fleeting very fast he called for the score and musing over it said did i not tell you truly that it was for myself that i composed this death chant.

*5. Write a short biography of any one distinguished writer or soldier of the present century; or, Describe the leading incidents in the life of one of the Stuart sovereigns.

THE MINOR EXAMINATION.

This examination qualifies for registration as a chemist and druggist, and enables the successful candidate straightway to open shop and retail poisons. There are two boards of examiners, one composed of English pharmacists, which holds its meetings at 17, Bloomsbury Square, London, W.C., in the months of February, April, June, July, October, and December; the other, composed of Scotch pharmacists, meets at 36, York Place, Edinburgh, quarterly, viz., in January, April, July, and October. The date on which the examination is to be held depends upon the number of candidates and other circumstances, but it is endeavoured to allow the candidates a week's clear notice from the time the date of the examination is determined, which is generally about the second of the month. Candidates for this examination must previously have been registered as apprentices or students, in virtue of having passed the preliminary or an equivalent examination, and gone through the proper formalities of registration. They must also be twenty-one years of age and have to produce a registrar's certificate to that effect. They must produce a certified declaration that for three years they have been registered and employed as apprentice or student, or have otherwise for three years been practically engaged in the translation and dispensing of prescriptions; printed forms for such declarations may be obtained from the Registrar, Mr. Richard Bremridge, 17, Bloomsbury Square, W.C.

The following form the subjects of examination:—

Prescriptions.—The candidate is required to read without abbreviation autograph prescriptions; translate them into English; and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of posology; also to render in good Latin ordinary prescriptions written in English.

Practical Dispensing.—To weigh, measure, and compound medicines; write the directions in concise language in a

neat and distinct hand; to finish and properly direct each package. In awarding marks in this subject the time taken by the candidate in doing the work is taken into account.

Pharmacy.—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, and have well-marked physical characters, such as extracts, tinctures, powders, &c.; to give the proportions of the active ingredients and possess a practical knowledge of the processes, and the principles of the processes, by which they are made, and of the best excipients and methods of manipulation for forming emulsions, pills, &c.

Materia Medica.—To recognise specimens of roots, barks, leaves, fruits, resins, gums, animal substances, &c., used in medicine; give the botanical and zoological names of the plants, &c., yielding them, and the natural families to which they belong; name the countries and sources from which they are obtained, the official preparations into which they enter, and judge the quality and freedom from adulteration or otherwise of the specimens.

Botany.—To recognise the more important indigenous plants used in medicine. To possess a general knowledge of the elementary structure of plants, and the structure and distinctive characters of roots, stems, leaves, and their parts. To name and describe the various parts of the flower.

Chemistry.—To recognise the ordinary chemicals used in medicine. To possess a practical knowledge of the processes by which they are produced, the composition of such as are compound, and explain the decompositions that occur in their production and admixture, by equations or diagrams. To determine practically, by means of tests, the presence in solution of the chemicals in common use, and explain the reactions which occur in each case. To possess a general knowledge of the laws of chemical philosophy, and a practical knowledge of the means of determining specific gravities, densities and temperature, and of the instruments appertaining thereto and the physical and chemical constitution of the atmosphere.

MAJOR EXAMINATION.

(For Registration as Pharmaceutical Chemists under the Pharmacy Act, 1852.)

Candidates for this Examination must have passed the Minor examination at least three months previously.

The following form the subjects of examination:—

Materia Medica.—This comprises a practical knowledge of the methods of estimating the value of important drugs, of obtaining their active proximate constituents in a separate state; of identifying them and ascertaining their purity or impurity by tests.

Botany.—This comprises an intimate acquaintance with the parts of the flower, fruit, and seed; the functions and mode of arrangement of the different organs of plants; a knowledge of the general principles of classification, and of the Linnæan and De Candolle's systems. The candidate must be able to distinguish practically between each of the following natural orders:—Ranunculaceæ, Papaveraceæ, Cruciferae, Malvaceæ, Leguminosæ, Rosaceæ, Cucurbitaceæ, Umbelliferae, Compositæ, Gentianaceæ, Convolvulaceæ, Solanaceæ, Atropaceæ, Labiatae, Scrophulariaceæ, Polygonaceæ, Euphorbiaceæ, Orchidaceæ, Iridaceæ, Liliaceæ, Melanthaceæ, Graminaceæ; and refer to their respective orders such specimens as may be shown to him.

Chemistry.—This comprehends an intimate knowledge of the laws of chemical philosophy, a practical knowledge of the nature and properties of the elements and their compounds, both organic and inorganic, especially those used in medicine or the arts. The different combinations and decompositions must be explained by equations; also the qualitative analysis of the more important chemicals, e.g. nitrates, chlorides, carbonates, sulphates, phosphates, oxalates, tartrates, &c., and the detection of impurities in them, and the volumetric estimation of the strength of all Pharmacopœia preparations in which standard solutions are ordered to be used.

An elementary knowledge of the properties of light, heat, electricity, and magnetism is also required. In the practical portion of the Major examination standard works of reference are provided for the use of candidates, at the discretion of the examiner. No other books or memoranda are allowed.

EXAMINATION AND REGISTRATION FEES.

	£	s.	d.
Preliminary examination	2	2	0
Minor examination	3	3	0
Major examination	5	5	0
Modified examination	1	1	0

All fees must be paid at the time of giving notice to attend an examination, and no portion of a fee is, under any circumstances, returned. Persons who have attended and failed to pass an examination are not entitled to attend on any future occasion within an interval of three months therefrom.

Persons who have attended and failed to pass an examination may make application for admission to an examination to be held within one year from the first day of the month in which the examination was held in respect of which the full original fee was paid, on payment of the following reduced fees:—

	£	s.	d.
Preliminary examination	1	1	0
Minor examination	2	2	0
Major examination	2	2	0

PRIZES AND SCHOLARSHIPS.

Council Examination Prizes.—Pharmaceutical Chemists who were Associates of the Society at the time of passing the Major Examination are entitled to compete for the following prizes at the end of the session in which they passed the Major Examination:—

First Prize.—Pereira medal in silver, and books value 5*l*.

Second Prize.—The Pharmaceutical Society's medal in silver, and books value 3*l*.

Third Prize.—The Pharmaceutical Society's medal in bronze, and books value 2*l*.

The books are presented by Mr. T. Hyde Hills in memory of Jacob Bell. The Pereira medal is considered a high honour. The examination is somewhat stiffer than the Major, and requires a fair knowledge of periodical literature.

The Jacob Bell Memorial Scholarships.—Two scholarships, value 30*l*., are offered annually, and are tenable for one year. Candidates for these scholarships must be apprentices or students of the Pharmaceutical Society. Free instruction is given in the Pharmaceutical Society's school.

Subjects of Examination.—Latin, French or German, English, Arithmetic, Elementary Chemistry, Pharmacy, and Botany.

Herbarium Prize.—One or more medals are annually offered for the best Herbarium, collected in any part of the United Kingdom, between the first day of January in one year and the first day of July in the year following.

Competitors must be apprentices or students of the Society, and under twenty-one years of age.

The Peter Squire Prize.—Whether this prize, which has been given on two occasions will again be awarded is a matter of doubt. It is intended to encourage practical botany amongst chemists and druggists.

PHARMACEUTICAL SCHOOLS.

THE SCHOOL OF PHARMACY.

17 Bloomsbury Square, W.C.

This is the oldest pharmacy school in the country, and it has produced many eminent pharmacists as well as men who, largely owing to the education received at the school, have left pharmacy to pursue science in its higher branches. The forty-fifth Session commences on October 1, and extends to the end of July. The first course of lectures begins on October 1 and the second course on March 1.

BOTANY AND MATERIA MEDICA.

By Professor Bentley, M.R.C.S.Eng., F.L.S.

These lectures are delivered three times a week, on Thursday, Friday, and Saturday mornings, at 9 o'clock, throughout the session, which extends from the beginning of October to the end of July.

Fees.

	£	s.	d.
Botany and Materia Medica, one course (five months) ..	2	2	0
An entire session (two courses), including Classification of plants and practical botany	3	3	0
Classification of plants and practical botany, separately ..	1	1	0
Perpetual admission to all the courses	4	4	0

CHEMISTRY (INCLUDING THE PHYSICS OF CHEMISTRY).

Professor Wynllham Dunstan, F.C.S.

These lectures are delivered on Monday, Tuesday, and Wednesday mornings, at 9 o'clock.

Fees.

	£	s.	d.
One course	3	3	0
An entire session (two courses)	4	4	0
Perpetual admission	5	5	0

PRACTICAL CHEMISTRY.

PROFESSOR ATTFIELD, PH.D., F.R.S., F.I.C., F.C.S.

Demonstrator.—Mr. FREDERICK WILLIAM SHORT.

Assistant-Demonstrator.—Mr. ERNEST JOHN EASTES.

Laboratories for practical instruction in chemistry as applied to pharmacy, &c., are open from 10 o'clock in the morning until five in the afternoon daily, except on Saturdays, when they are closed at 2 o'clock.

Fees.

Hours of study	One month	Two months	Three months	Five months	Ten months
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
10.0 to 5.0 daily (Sat. 10.0 to 2.0)	4 4 0	7 7 0	10 10 0	15 15 0	26 5 0
10.0 to 5.0 on any <i>three</i> days weekly	2 17 6	4 17 6	6 16 6	10 10 0	17 17 0
10.0 to 5.0 on any <i>two</i> days weekly	2 2 0	3 10 0	4 17 6	7 7 0	12 12 0
Any three hours daily ..	2 17 6	4 17 6	6 16 6	10 10 0	17 17 0
Any two hours daily ..	2 2 0	3 10 0	4 17 6	7 7 0	12 12 0

PHARMACY AND PRACTICAL PHARMACY.

Mr. Joseph Ince, F.L.S.

Lectures will be given on pharmacy, and demonstrations in practical pharmacy, including instruction in the reading of prescriptions, practical dispensing, &c.

Fees.

	£	s.	d.
One course	2	2	0
An entire session (two courses)	3	3	0

Dr. Theophilus Redwood, F.C.S., &c., holds the position of emeritus professor of chemistry and pharmac.

OPENING OF THE SCHOOL.—In accordance with custom the session will be formally opened on Wednesday, October 6, when Sir Henry W. Acland, K.C.B., F.R.S., &c., President of the General Medical Council, will deliver an inaugural address in the lecture theatre at 8 o'clock in the evening. The Council and other prizes and medals will also be presented by the President of the Society, who will preside.

NORTH BRITISH BRANCH.

The Pharmaceutical Society's premises in Scotland, situated at 36 York Place, Edinburgh, contain an excellent museum and library which are available for the use of students of the society, but others are admitted under certain conditions. The premises are convenient for study, and are largely taken advantage of by those who spend a short time in the city before examination. Many years ago, special courses of lectures were organised by the Council of the branch, but these failing arrangements were made, and still exist, for pharmaceutical students attending the ordinary medical courses in botany, chemistry and materia medica at reduced rates. Under this arrangement students could mix with the "medicals" either at the university or college classes, but latterly the university authorities have passed a rule whereby all are placed on an equal footing, so far as fees are concerned; therefore, if the pharmaceutical student wishes to

attend the university classes he must first matriculate, which costs 1*l.* 1*s.* in winter and another half-guinea in summer. Chemistry is taught by Prof. Crum Brown (fee, 3*l.* 3*s.*) every morning, except Saturday, between 9 and 10. Materia medica and therapeutics, by Prof. T. R. Fraser, between 10 and 11. These lectures are in the winter months. In the summer (May to July) Prof. Dickson lectures in the Botanic Gardens from 8 to 9. Few pharmaceutical students attend these classes, as the arrangements with extra-mural lecturers are more favourable to them as to cost. In chemistry, Dr. Stevenson Macadam lectures at the Surgeons' Hall, and Mr. Falconer King at Minto House. Fee for the course of 100 lectures, 2*l.* 2*s.* The lectures go over much more ground than is required for the Minor, and pharmaceutical students generally come out well in the prize lists. The practical classes are good, and if asked the teachers place the student on a line of pharmaceutical work. Fee, 2*l.* 2*s.*, for three months, one hour per day.

The materia medica lectures are not at all adapted for pharmaceutical examinations, being chiefly therapeutical. Botany lectures in the summer months are given by Mr. A. N. McAlpine, B.Sc. (London). Fee, 2*l.* 2*s.* The class meets in Minto House, and there are excellent microscopic demonstrations in connection with it.

It should be understood that the facilities afforded by these classes are chiefly advantageous to assistants and apprentices residing in Edinburgh and the neighbourhood. Tickets may be obtained from Mr. J. R. Hill, assistant secretary of the society, at the above address.

SOUTH LONDON SCHOOL OF PHARMACY.

325, Kennington Road, S.E.

This school was established immediately after the passing of the Pharmacy Act, and since 1868 has turned out a large number of excellently equipped pharmacists. The principal is Dr. John Muter, M.A., F.C.S., &c.

Students use a special series of text-books which have been written by the principal, and the system adopted therein is followed in the lectures, so that the student is saved a considerable amount of mental friction by being kept in one line of study as far as possible. The session extends from September 15. The following is a digest of the course of study:—

Elementary Chemistry and Physics.—Sixty lectures and class examinations, embracing the requirements of the Minor examination; fee, 3*l.* 3*s.*

Advanced Chemistry and Physics.—Sixty lectures and class examinations, embracing the requirements of the Major examination; fee, 3*l.* 3*s.*

Laboratory instruction in chemistry is given at the rate of 3*l.* 3*s.* per month for the junior and 4*l.* 4*s.* for the Senior, with a reduction of 1*l.* 1*s.* per month if three months be taken.

Elementary Materia Medica.—Thirty lectures and class examinations designed for the Minor; fee, 2*l.* 2*s.*

Advanced Materia Medica.—Thirty lectures and class examinations for Major students; fee, 2*l.* 2*s.*

A practical class for chemical, microscopical, and toxicological study of drugs is attached to this.

Elementary Botany.—Thirty lectures and class examinations for Minor students; fee, 2*l.* 2*s.*

Advanced Botany.—Thirty lectures and class examinations, including microscopic botany, &c., suitable for the Major examination; fee, 2*l.* 2*s.*

Fifty Lessons, with practical instruction in pharmacy and dispensing, for one month, three hours per week; fee, 1*l.* 11*s.* 6*d.*

Prescription Latin.—Thirty lessons, 1*l.* 1*s.*

Compounding Fees.—The fees may be paid in one sum on entry, viz.: Junior Division (Minor), three months, 10*l.* 10*s.*; five months, 14*l.* 14*s.*; Senior Division (Major), three months, 12*l.* 12*s.*; five months, 18*l.* 18*s.* The secretary, Mr. W. Baxter, will give fuller information.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY,

Trinity Square, London, S.E.

This college is under the management of Messrs. George S. V. Wills, F.L.S., and H. Wootton, and the session extends from September 1 to July 25. It annually turns out a large

number of successful candidates for all the examinations of the Pharmaceutical Society. The students are well looked after, and during the course of study, which is well systematised, they have their hands quite full of work. The following will give an idea of the work:—

Minor.—250 lectures are given on the six subjects of study. The student also puts in two hours daily at practical chemistry; $2\frac{1}{2}$ hours being devoted to botany, chemistry, and physics on Saturdays.

Major.—130 lectures, and three hours daily at practical chemistry; on Saturdays $2\frac{1}{2}$ hours at chemistry and botany.

Fees, for Minor or Major, six weeks (one course), 6*l.* 6*s.*; fourteen weeks, 9*l.* 9*s.*; or 15*l.* 15*s.* for a year's instruction, sufficient for Minor and Major. A class for the Preliminary meets daily from 10 to 12, and there are also evening classes for the Preliminary and Minor. The fees are low and the instruction fairly comprehensive.

For the benefit of those who cannot attend a school the directors some years ago instituted a postal system of instruction. The fee for the Preliminary course is 10*s.* 6*d.*, and for the Minor and Major, 1*l.* 1*s.* The course of instruction covers the ground of the respective examinations. Weekly, or at longer intervals, two or more lectures are sent to the student, which he copies and returns. Other communications pass between the teacher and the student. In this way young men who have nobody to guide them in their studies get considerable interest imported into their work.

CENTRAL SCHOOL OF CHEMISTRY AND PHARMACY,
173 *Marylebone Road, London, N.W.*

Principal: Mr. J. Woodland, F.L.S. Instruction is given during the day, also in the evening.

MIDLAND COUNTIES CHEMISTS' ASSOCIATION,
Birmingham.

The classes for pharmaceutical students which are held under the auspices of the above association will be resumed in the rooms of the association, 90 New Street, Birmingham, on Monday, October 4. These are intended for students who are employed in the pharmacies of Birmingham and neighbourhood, and afford excellent instruction at a comparatively low rate. Hitherto good results have followed the efforts of the teachers, several students having passed the Minor and Major examinations in a creditable manner.

Instruction is given in the subjects for all the examinations.

Preliminary.—Teacher, Mr. Stokes Dewson.

Minor.—Teachers, Mr. Stokes Dewson (chemistry), Mr. F. H. Alcock, F.C.S. (botany and materia medica), and Mr. George E. Perry (pharmacy). Instruction is also given in practical dispensing, provided a sufficient number of students come forward to form a class.

Major.—Teachers, Mr. A. E. Robinson, F.C.S. (chemistry, theoretical and practical), Mr. Dewson (botany and materia medica).

MANCHESTER COLLEGE OF CHEMISTRY AND PHARMACY,
225 and 227A *Oxford Street, Manchester.*

Director, Mr. W. Spencer Turner. This nine-year-old college is one of the most flourishing provincial schools. The director adopts the tutorial system throughout, and in this way is enabled to sort out his students according to their abilities and the relative degree of their knowledge. Mr. Turner's men are, as a rule, well grounded in all subjects. Their whole course of study is on the *viva voce* system, and about half a dozen are taken in a class, so that a kind of friendly rivalry springs up amongst them, which expedites the student in his work.

There are three sets of classes for the Minor—viz., full-time, afternoon, and evening. The first of these in the course of three months takes the student over all the work at a charge of 9*l.* 9*s.*, including apparatus. The afternoon class meets twice a week, and once along with the full-time men for practical work. This and the evening class are suitable for local men. Fee, 3*l.* 3*s.*, per quarter. For the Major full-time and evening classes are held: the fee for the former is 2*l.* 2*s.* per month and 15*s.* per month for the latter. Instruction is also given in the subjects of the Preliminary examination at a moderate rate. Mr. Turner is assisted by Mr. George Clayton, who takes the junior pupils.

VICTORIA UNIVERSITY,
THE OWENS COLLEGE, MANCHESTER.

Pharmaceutical Department.

Instruction adapted to the requirements of students preparing for the pharmaceutical examinations is given both in the day and evening classes of the college; the course extending over two years and comprising chemistry (theoretical and practical), botany (theoretical and practical), materia medica, pharmaceutical chemistry, and pharmacy and dispensing.

The evening classes in pharmaceutical subjects are taught by Drs. Bailey and Cohen (chemistry), Professor Williamson (botany), Professor D. J. Leach (materia medica), assisted by Mr. W. Elborne, *Phar. chem.*, who also teaches pharmaceutical chemistry (theoretical and practical), and pharmacy and dispensing. The day classes in botany, chemistry, and materia medica are the ordinary classes of the college. The fees for a two years' course of evening classes amount to 14 guineas (inclusive of chemical laboratory practice in the first year, but exclusive of the pharmaceutical laboratory work). Full particulars regarding these classes may be had on application to the Registrar, Mr. H. W. Holder, M.A.

LIVERPOOL SCHOOL OF PHARMACY,
36 *Oxford Street, Liverpool.*

Principal, Mr. John S. Ward. This school was established in 1882, and the course of instruction has been recognised by the local pharmaceutical association. One hundred and eighty lectures are delivered in the various subjects, and two hours daily are devoted to practical chemistry. These remarks apply to the Minor course. Afternoon and evening classes are held for the Major, and there are also classes for the Preliminary. The fees are: Preliminary, 2*l.* per quarter; Minor, 7*l.* 10*s.* per quarter; and Major, 4*l.* 10*s.* for six months. Mr. Ward's efforts have been confined to supplying the Liverpool district, apparently with considerable success, and students say he is a painstaking and careful teacher.

SHEFFIELD.

The School of Pharmacy of the Sheffield Pharmaceutical and Chemical Society is a recognised local institution. The classes meet in the society's rooms, Norfolk Chambers, Norfolk Row. The session extends from October to April in each year. The classes being taught by practical pharmacists are held in the evening (8.30 to 9.30 four nights a week). The teachers are Mr. J. M. Furness, A.P.S. (materia medica and pharmacy); Mr. G. A. Gricson, A.P.S. (botany); Mr. C. O. Morrison, Ph.C. (practical chemistry); and Mr. S. P. Rhoden, A.P.S. (chemistry and physics). Fees, 7*s.* 6*d.* each class, except practical chemistry (10*s.* 6*d.* including apparatus), or 1*l.* 10*s.* for the whole. Particulars from the hon. sec., Mr. J. H. Bradwall, Ecclesall Road, Sheffield.

LEEDS CHEMISTS' ASSOCIATION.

Evening classes are held in connection with this association, which are conducted by competent pharmacists. Particulars may be obtained on application to Mr. Frederick W. Branson, pharmaceutical chemist, 14 Commercial Street, Leeds.

LEICESTER AND LEICESTERSHIRE CHEMISTS' ASSOCIATION.

Classes are held in the rooms of the Association, the subjects taught being botany, chemistry, materia medica, and pharmacy. The Hon. Sec. (Mr. J. I. Edwards, The Newarke, Leicester) will furnish particulars.

EDINBURGH SCHOOLS.

Dr. Drinkwater, 41 Chambers Street, assisted by one or more lecturers, conducts classes for the Minor and Major. The subjects taught are botany, chemistry, and materia medica. The laboratory affords accommodation for a considerable number of students, and they undergo a thorough course of training therein. Evening classes are also held, and instruction is given by correspondence. For particulars, application should be made to Dr. Drinkwater at the above address.

At the Royal Dispensary, West Richmond Street, tutorial classes (day and evening) are conducted by Mr. W. Duncan,

Ph.C., the apothecary of the institution. Minor students have the advantage of assisting in the dispensary if they choose, this work being done in the evening. Day and evening classes are held for both Minor and Major.

The School of Medicine, Marshall Street, Nicholson Square, has a pharmaceutical section, which is under the management of Mr. R. Urquhart, secretary, assisted by Dr. C. H. Stewart (chemistry) and Mr. A. Johnston, F.G.S. (botany). Chemistry, *materia medica*, pharmacy and botany are the subjects of study.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS,

Bridge Street, Aberdeen.

The Committee have made arrangements under which students attend the classes at Gordon's College, while practical chemistry is taught in the society's laboratory in Bridge Street.

TULLY'S POSTAL SYSTEM.

Mr. JOHN TULLY, chemist, Hastings, "Hill's Prizeman," established his postal system in 1872. It is divided into three classes. No. 1 is for the Preliminary; fee 10s. 6d. (if the student fail, Mr. Tully takes him on again without fee if he passes within six months). No. 2 is for the Minor examination, for students under twenty years of age. No. 3 is for the Minor, for students over twenty; fee 1l. 1s. No. 2, or the junior course of study, starts the youth in all the subjects for the Minor examination, and he is not allowed to pass from one stage to another without mastering it. The same may be said of the senior course. Lessons are sent fortnightly, and examination papers at like intervals, to test the student's progress. The time usually occupied is four to six months, but the teaching is continued, if necessary, for a period not exceeding twelve months.

APOTHECARIES' HALL ASSISTANTS' QUALIFICATION.

Many students enter for the examination for this certificate. It gives them an idea of how they stand before they enter for the Minor; in fact it is sometimes spoken of as the "preliminary canter for the Bloomsbury stakes." The examination is held every Thursday in the Hall; seven days' notice must be given, and a fee of two guineas paid, which in the event of failure is retained, no further payment being required for re-examination, which may take place in not less than three months.

The subjects of the examination are as follows:—Translating physicians' prescriptions, British Pharmacopœia, pharmacy, pharmaceutical chemistry, *materia medica*, and medical botany. In the latter subject candidates are expected to display a competent knowledge of structural and physiological botany, such as may be obtained from lectures and from any elementary work. They are also expected to describe and identify typical specimens, and to give the distinguishing characters of the following natural orders, viz.:—Compositæ, Convolvulacæ, Cruciferae, Cucurbitacæ, Filices, Gentianacæ, Graminacæ, Labiatae, Leguminosæ, Liliacæ, Melanthacæ, Papaveracæ, Ranunculacæ, Rosacæ, Rutacæ, Scrophulariacæ, Solanacæ, Umbelliferæ.

IRELAND.

Pharmacists in Ireland hold a position rather different from that of their British brethren. Before the passing of the Pharmacy Act (Ireland) the dispensing of prescriptions was legally confined to licentiates of the Apothecaries' Hall of Ireland. A class of tradesmen dealing in drugs and druggaleries existed with the name of chemists and druggists. They did not dispense prescriptions. The Pharmacy Act created a new class of men legally qualified to dispense prescriptions, but not connected with the Apothecaries' Society. The title of "pharmaceutical chemists" was conferred upon them. The Pharmaceutical Society of Ireland was entrusted with the administration of the Act, with power to register pharmaceutical chemists, to examine candidates for registration, and to prosecute for offences against the Act. The title of "chemist and druggist" was not recognised, nor was any honorary title created. The examinations for the title of

"pharmaceutical chemist" are, therefore, the only entrance to the profession of pharmacy in Ireland, only those who secure this title being legally qualified to open a shop for the dispensing of prescriptions. The examinations differ from those of the British Society in important particulars.

Candidates for the Preliminary examination must be sixteen years of age and upwards. They are examined in Latin, English, arithmetic, and the rudiments of chemistry and botany. Certain examinations are accepted in place of this. The fee is 2l. 2s., and the examination is held in Dublin four times a year.

Candidates for the pharmaceutical examination must be twenty-one years of age, and must have passed the Preliminary examination at least one year previously. They must have been practically engaged in compounding and dispensing for at least two years, and must have attended a practical course in chemistry at a recognised school. The examination is held four times a year, the subjects being botany, general and pharmaceutical chemistry, including qualitative and volumetric analysis, and practical pharmacy, including dispensing. Candidates for the licence who had not passed their Preliminary examination before January 3, 1883, must have served a *bond fide* apprenticeship of three years, or have acted as assistants for four years in the sole employ of a pharmaceutical chemist or apothecary.

The Registrar, Dublin, will give any additional information required.

SCIENTIFIC EDUCATION.

STATE-AIDED EDUCATION.

THE student who chooses a scientific career will require a long course of training, and should, in addition, possess some examinational qualifications. In large towns a scientific education up to a certain point can be obtained at a cheaper rate than any other on account of the State aid offered through the Science and Art Department, the teacher being paid by grants of 1l. to 4l. for each pass, according to the grade thereof. These grants are, however, only made on account of (a) persons in receipt of weekly wages, and their children if not gaining their own livelihood; (b) teachers and pupil teachers of elementary schools in connection with the Education Department, and their children if not gaining their own livelihood; (c) persons in receipt of not more than 200l. per annum, and their children if not gaining their own livelihood; (d) scholars in public elementary schools.

The principal examining bodies in scientific subjects are the Science and Art Department, the Universities, the Institute of Chemistry, and the City and Guilds of London Institute.

The examinations of the Science and Art Department are held annually in May, and embrace almost all sciences. Each subject is divided into three stages, viz., elementary, advanced, and honours, and first and second class certificates are awarded in each stage. In the elementary stage the questions set are such as to meet the capacity of senior pupils in elementary schools. In the advanced stage the standard is considerably higher, while for severity the honours stage may be compared with the highest university examinations. The examinations are held in all towns where classes are conducted in connection with the department, and those students who have attended such classes are examined without fee. Students not attending such classes may be examined (except in the subjects of practical chemistry and practical metallurgy) by giving notice before March 25, and paying a fee not exceeding 2s. 6d. for each subject. In connection with these examinations, local exhibitions are offered to enable students to complete their education at some college or school where scientific instruction of an advanced character may be obtained. Grants of 25l. per annum for one, two, or three years are made for this purpose when the locality raises a like sum by voluntary subscriptions. And if the student attend a State school the fees are remitted. Seven royal exhibitions of the value of 50l. per annum, tenable for three years, are given in competition at the May examinations—four to the Normal School of Science and Royal School of Mines (London), and three to the Royal College of Science (Dublin). Twelve national scholarships tenable at either the

Normal School of Science and Royal School of Mines (London), or at the Royal College of Science (Dublin), are awarded each year; they entitle the holder to free instruction for three years, and to a maintenance allowance of 30s. a week during the session. The national scholarships are restricted to those students on whose behalf grants would be made to a teacher.

There are also six free studentships at the Normal School of Science awarded each year; these entitle the holders to free admission to the lectures and laboratories, and to instruction during the course for the Associateship (about three years), but not to any maintenance or travelling allowance. Fuller information as to the organisation of the department and the qualifying conditions for the scholarships, &c., will be found in the Science Directory, which is issued annually in September, price 6*d.*; it can be obtained from the Secretary, Science and Art Department, South Kensington. The examination questions of the past year can also be had, price 6*d.* Letters need not be stamped.

DEGREES AND TITLES.

Among the Universities conferring degrees in science are those of London, Edinburgh, Glasgow, St. Andrews, and the new Victoria University having its seat at Manchester. The University of London confers the degrees of Bachelor and Doctor of Science. In order to obtain these degrees the student, who must not be under sixteen years of age, must pass a severe matriculation examination, the subjects of which are Latin, English language, English history, geography, arithmetic, algebra, geometry (four books Euclid), chemistry, natural philosophy, and any two of the following languages:—(a) Greek, (b) French, (c) German, and (d) either Sanskrit or Arabic. This examination is held twice annually, simultaneously in London and some of the most important educational centres in Great Britain. Several valuable scholarships are offered. The fee is 2*l.* The intermediate examination in science is held in July. Candidates must have passed the matriculation examination at least twelve months previously, unless they have obtained honours. The subjects are inorganic chemistry (including practical testing), experimental physics, pure mathematics, mixed mathematics, and general history. The fee is 5*l.* The final examination for the degree of B.Sc. is held annually in October. A year must have elapsed since the passing of the intermediate examination. A competent knowledge is required of *any three* of the following subjects which the candidate may select:—Pure mathematics, mixed mathematics, experimental physics, chemistry, hotany, zoology, animal physiology, physical geography and geology, and mental and moral science. The fee is 5*l.* Those who aspire to the Doctorate must transmit a dissertation or thesis on some scientific subject, and on the particular branch of science chosen they may be required to undergo any reasonable test which the examiners choose to apply. Candidates must have been Bachelors of Science at least two academic years. The fee is 10*l.*, and the examination is held in June. The science degrees of the University of London are valued more than those of any other public body; this is undoubtedly due to the high standard required of students when matriculating, and to the severity of the succeeding examinations. Candidates are allowed to obtain their knowledge where, when, and how they like. In this respect the London University is unique.

The degrees of Bachelor and Doctor of Science can also be obtained at the University of Edinburgh. A Preliminary examination must be passed in English, Latin, arithmetic, mathematics, mechanics, and two other subjects. The attendance on science classes for the degree of B.Sc. must extend over three academic years, one of which must be passed at the University of Edinburgh, the other two years either at the same university or at universities or institutions recognised and approved by it. There are two examinations for this degree, the first of which includes mathematics, natural philosophy, chemistry, zoology, and hotany. The second is divided into the following groups, one of which must be professed by the candidate:—(a) Mathematical sciences, (b) physical experimental sciences, (c) natural sciences. The degree of D.Sc. may be taken twelve months after passing the second B.Sc. examination. The candidate is required to show a thorough knowledge of some one

branch of science and must submit a thesis. The examination fees are as follows:—Preliminary, 1*l.* 1*s.*; first B.Sc., 2*l.* 2*s.*; second B.Sc., 2*l.* 2*s.*; D.Sc., 5*l.* 5*s.*

The Glasgow University grants the degree of Bachelor of Science. The subjects of the Preliminary examination are English, arithmetic, algebra, Euclid (three books), and any two of the following:—French, German, Latin, Greek. The degree may be taken in either biological, physical, or engineering science. The fee is 3*l.* 3*s.* Attendance at the university classes is compulsory. There are several valuable scholarships attached to this department of the university, who are a strong inducement to students.

The University of St. Andrews confers the degrees of Bachelor and Doctor of Science. All candidates for the degree of B.Sc. must pass a Preliminary examination, unless they already possess certain qualifications indicated in the Calendar. The subjects of the Preliminary examination are English, Latin, arithmetic, mathematics, mechanics, and at least two of the following subjects:—Greek, French, German, higher mathematics, natural philosophy, logic and moral philosophy, physiology, chemistry, natural history, and botany. The degree of bachelor may be obtained either in (I.) physical and natural science, or in (II.) engineering. Candidates in (I.) must pass two examinations: the first includes mathematics, natural philosophy, chemistry, zoology, physiology, and botany; the subjects of the second are the same, with the addition of experimental physics. Candidates in (II.) must also pass two examinations: the first is in mathematics, mechanics, experimental physics, chemistry, and drawing; the second includes engineering, drawing, and either mathematics applied to mechanics or electricity.

Should the candidate desire to proceed to the degree of D.Sc. he may, after a lapse of twelve months, present himself for examination. He must profess one and not more than one of the subjects belonging to the group in which he became B.Sc., and must further profess some special branch of that subject. He must also present a thesis embodying some original researches on the subject of his intended examination.

Attendance at the courses of the university or those of an affiliated college is compulsory, the latter provision having special reference to the Dundee University College, where science is a much larger factor in the curricula than in St. Andrews.

The Victoria University, having its seat in the city of Manchester, was founded by a royal Charter in 1880, and its powers were enlarged by a supplemental charter in 1883. The colleges are Owens College, Manchester, and University College, Liverpool. To obtain the degree of Bachelor of Science at this university a three years' curriculum is necessary, except in the case of those candidates who offer themselves for the Preliminary examination at the date of their matriculation. They are not then required to present certificates of attendance on the first year's course. The subjects of the Preliminary examination are English language, English history, pure mathematics, and three of the following:—Latin, Greek, French, German, experimental mechanics, and chemistry. The degree may be obtained in any of the following five groups of sciences:—Mathematics, engineering, experimental science, biological, geological.

The Institute of Chemistry of Great Britain and Ireland was incorporated by Act of Parliament in 1877. It was established to ensure that consulting and analytical chemists are duly qualified for the proper discharge of the duties they undertake. In order to become connected with the institute it is necessary to have passed satisfactorily through a course of three years' study of theoretical and analytical chemistry, physics, and elementary mathematics at some university or institution approved by the Council, and to have attained the age of 21 years. A list of approved institutions may be obtained from the Secretary, Somerset House Terrace, London, W.C. The candidate is then required to submit to a stringent examination, extending over four days, in qualitative and quantitative analysis, including gas analysis; when, if successful, he may become an Associate of the Institute. The fee for the examination is two guineas.

In the case of a Fellow, the Council requires that the candidate shall have been admitted as an Associate, and that since his admission, and for a period of three years therefrom, he shall have been continuously engaged in the study and practical work of applied chemistry. We give below the

centres at which the practical examination for the Associateship is held, and the names of the examiners:—

Birmingham	..	..	..	W. A. TILDEN, D.Sc., F.R.S.
Bristol	..	..	..	W. RAMSAY, Ph.D.
Dublin	..	..	..	W. N. HARTLEY, F.R.S.
Glasgow	..	..	..	E. J. MILLS, D. Sc., F.R.S.
London	..	..	..	CHARLES GRAHAM, D.Sc.
Manchester	..	..	..	WATSON SMITH.

WHERE TO GET SCIENTIFIC EDUCATION.

Having indicated briefly the requirements for the principal scientific qualifications we shall now call attention to some educational institutions which do not grant degrees and yet give a sound scientific education.

THE CITY AND GUILDS OF LONDON INSTITUTE FOR THE ADVANCEMENT OF TECHNICAL EDUCATION.

Two distinct organisations for education already exist in connection with this body.

The Technical College, Finsbury, has for its objects the education of—

(1) Persons of either sex who wish to receive scientific and practical preparatory training for intermediate posts in industrial works.

(2) Apprentices, journeymen, and foremen, who are engaged in the day-time, and who desire to receive supplementary instruction in the art, practice, and in the theory and principles of science connected with the industry in which they are engaged.

(3) Pupils from middle class or other schools who are preparing for the higher scientific and technical courses of instruction to be pursued at the Central Institution.

The college therefore fulfils the functions of a finishing technical school for those entering industrial life at a comparatively early age; of a supplemental school for those already engaged in the factory or workshop; and of a preparatory school for the Central Institution.

The college embraces the following four chief divisions or faculties:—

- | | |
|---------------------------------|-----------------|
| 1. Mathematical and Mechanical. | 3. Chemical. |
| 2. Physical. | 4. Applied Art. |

The day classes are intended to fit those who pass through them to enter industrial works immediately. Courses of instruction are provided in mechanical engineering and applied mathematics (Professor John Perry, M.E.), applied physics and electric engineering (Professor Silvanus P. Thompson, D.Sc., B.A., F.R.S.), chemistry (Professor R. Meldola, F.R.S., F.I.C.), and applied art (Mr. A. F. Brophy, headmaster).

The course of instruction for all-day students comprises practical mathematics, lectures and laboratory work in mechanics, physics, and chemistry, mechanical and freehand drawing, workshop instruction in wood and iron, and French or German.

The fee for day students for a complete course of instruction is 9*l.* for the session, payable in advance at the commencement of the session in October; or 10*l.* for the session, payable in three instalments of 5*l.*, 3*l.*, and 2*l.* at the commencement of each term. These fees include attendance at all the lectures, laboratory, and workshop courses in the department which the student enters, as well as the use of the apparatus and materials.

Applicants for admission, who must not be less than fourteen years of age, will be required to produce a certificate of good conduct from their former school, or other testimony of good moral character.

Before being admitted as day students they will be required to pass an elementary examination in mathematics, and to give evidence of possessing a fair knowledge of English. The examination in mathematics will include arithmetic, algebra, as far as simple equations, and geometry, as far as the subjects of the second book of Euclid.

The certificate of the college is granted to students who have attended regularly during two sessions in any one department, and have satisfactorily passed the class examinations. The examination for the admission of students will be held at the college on September 29, at 10 A.M. The evening classes commence mostly at 6 P.M. The fees vary

from 6*s.* to 12*s.* 6*d.* each course for a session of about eight months. Apprentices are admitted at half the ordinary fees. Courses of instruction are provided in mathematics and mechanical engineering, electrical engineering, applied physics, chemistry, and various special trades. Further particulars and syllabus of complete course of instruction for evening students can be obtained on application.

The Central Institution, Exhibition Road, S.W., is intended to provide thorough instruction for those who wish to become mechanical, electrical, or chemical engineers, or to be teachers.

Students will be required to pass an entrance or matriculation examination, which will include mathematics pure and applied, chemistry, physics, drawing, and French or German. The fees for a complete course of instruction for a matriculated student will be about 30*l.* per annum. The fees for separate courses, including laboratory work, will be from 10*l.* to 30*l.* The session will commence on October 5, 1886, and the fee to students then admitted will be 20*l.* to the end of the session. The entrance examination will commence on September 27, 1886. Various scholarships are offered. The entrance examination will include pure and applied mathematics, mechanical drawing, physics, chemistry, and French or German. Courses of instruction in mechanical, electrical, and chemical engineering are already established. The Institute has also arranged technological examinations, which are held in different centres throughout the country in the following subjects:—

(1) Alkali and allied branches—(a) Salt manufacture, (b) Alkali manufacture, (c) Soap manufacture; (2) Bread-making; (3) (a) Brewing, (b) Spirit manufacture; (4) Coal-tar distilling; (5) Sugar manufacture; (6) Fuel; (7) Oils, colours, and varnishes, manufactures of; (8) Oils and fats, including candle manufacture; (9) Gas manufacture; (10) Iron and steel manufacture; (11) Paper manufacture; (12) Pottery and porcelain manufacture; (13) Glass manufacture; (14) Dyeing—(a) Silk, (b) Wool, (c) Cotton and other vegetable fibres; (15) Bleaching and printing (cotton and linen); (16) (a) Tanning leather, (b) Boot and shoe manufacture; (17) Photography; (18) Electro-metallurgy; (19) Textile fabrics, manufacture of—(a) Cloth, (b) Cotton, (c) Linen, (d) Silk, (e) Jute; (20) (a) Lace manufacture, (b) Framework knitting; (21) Weaving and pattern designing; (22) Electrical engineering—(a) Telegraphy, (b) Electric lighting and transmission of power, (c) Electrical instrument making; (23) Metal-plate work; (24) Plumbers' work; (25) Silversmiths' work; (26) Watch and clock making; (27) Tools—(a) Wood-working, (b) Metal-working; (28) Mechanical engineering; (29) Carriage building; (30) Printing—(a) Typography, (b) Lithography, &c.; (31) Ores, raising and preparation of; (32) Mine surveying; (33) Milling (flour manufacture); (34) Carpentry and joinery; (35) Brickwork and masonry.

The examinations will be in two grades—I, Ordinary; II, Honours; and will be held on May 25 and 28, 1887.

The following prizes will be given in each subject, provided the merits of the candidates justify the examiners in awarding them.

Honours Grade	1st prize, 5 <i>l.</i> and a Silver Medal
	2nd " 5 <i>l.</i> " Bronze "
Ordinary Grade	1st prize, 3 <i>l.</i> and a Silver Medal
	2nd " 3 <i>l.</i> " Bronze "
	3rd " 2 <i>l.</i> " " "
	4th " 1 <i>l.</i> " " "
	5th " a Bronze Medal

A programme can be obtained from the Secretary to the Institute, Gresham College, E.C.

UNIVERSITY COLLEGE, LONDON.

This institution, which is frequently confounded with the University of London, offers great facilities for scientific education. Most of the professors are men of world-wide fame in their special departments. The course of study is specially arranged to meet the requirements of the University of London examinations. Instruction in electrical and chemical technology is given by Dr. J. A. Fleming and Dr. C. Graham. The fees for a complete course of lectures vary from 2*l.* 2*s.* to 9*l.* 9*s.* The fee for instruction in the chemical laboratory is 26*l.* 5*s.* for the session; in the physical laboratory 17*l.* 17*s.* A considerable number of valuable prizes and scholarships are offered for competition.

KING'S COLLEGE, LONDON.

This college provides a complete course of scientific instruction and is well suited to students who wish to graduate at the London University. It is one of the institutions recognised by the council of the Institute of Chemistry. There is a department of engineering and applied science, the object of which is to provide a system of general and practical education for those who are likely to be engaged in commercial or agricultural pursuits, or in surveying and civil engineering, building construction and architecture, telegraphy, mechanical engineering, &c. The whole course occupies three years, and forms an appropriate introduction to the higher instruction which can only be obtained within the walls of the manufactory, or by actually taking part in the labours of a surveyor, an engineer, or an architect.

Evening classes are held in mathematics, mechanics, physiology, botany, experimental and applied physics, mineralogy and geology, comparative anatomy and practical biology, metallurgy, and other subjects. The fees for these evening classes are from 10s. 6d. to 1l. 1s. per term.

THE NORMAL SCHOOL OF SCIENCE AND ROYAL SCHOOL OF MINES, SOUTH KENSINGTON.

This is an institution supported by the State to supply systematic instruction in the various branches of physical science. It is primarily intended for the instruction of teachers and of students of the industrial classes selected by competition in the examinations of the Science and Art Department, but under certain conditions other students are admitted. The fees are rather high. The instruction is arranged in such a manner as to give the students a thorough training in the general principles of science, followed by advanced instruction in one or more special branches of science. The associateship is granted to those students who go through any one of the prescribed courses of instruction (extending over three years) in the prescribed order and pass the necessary examinations. It is a valuable scientific qualification. The associateship of the Normal School of Science is given in one or more of the following divisions:—Mechanics, physics, chemistry, biology, geology, agriculture; and the associateship of the Royal School of Mines in metallurgy or mining. Attention has already been called to the numerous and valuable scholarships, &c., in the paragraph on the Science and Art Department.

OWENS COLLEGE, MANCHESTER.

This institution has already been alluded to in connection with the Victoria University. Its reputation as a school of chemical and physical science is second to none in the United Kingdom. The average fees for the courses for the B.Sc. degree are—first year, 18l. 4s.; second year, 21l.; third year, 20l. Special facilities are offered to students preparing for the London University examinations.

THE MASON SCIENCE COLLEGE, BIRMINGHAM.

Students under sixteen must, before admission to the College classes, pass a preliminary examination in arithmetic, algebra, geometry (first book of Euclid), and English grammar and dictation, as well as a *vivâ voce* examination in either Greek, Latin, French, or German, at the choice of the candidate. There are two entrance scholarships of 30l. each, open to students under eighteen years of age, and two of the value of 30l. each to students of one or two years' standing. Two scholarships are awarded in connection with the examinations of the University of London: one of 20l. for the student who is highest in honours at the June Matriculation Examination, and one of 20l. for the student who has obtained the most distinguished place in first-class honours in the Intermediate Science or Arts Examination. There are also two technical scholarships of 30l. each, presented by Messrs. Tangye, one to be awarded in the chemical and the other in the engineering department. All these scholarships are tenable for one year, and are open to students of either sex.

The courses of instruction are well adapted to students who intend to graduate in science at the University of London.

Evening classes are held.

THE YORKSHIRE COLLEGE, LEEDS.

Day students who wish to enjoy the educational advantages this College affords must have attained the age of fourteen,

and those who are under sixteen must pass an entrance examination in arithmetic, algebra, geometry (first book Euclid), and English composition and dictation. Several scholarships, tenable for two years, and ranging in value from 20l. to 25l., are offered for competition annually. The courses in the various science subjects are sufficiently advanced to enable students to graduate at the University of London.

The lecture fees are moderate.

UNIVERSITY COLLEGE, BRISTOL.

The College supplies for persons of either sex above the ordinary school age the means of continuing their studies in science, languages, history, and literature, and particularly affords appropriate instruction in those branches of applied science which are more nearly connected with the arts and manufactures. A course of instruction has been arranged for students intending to become engineers, surveyors, or architects.

The wants of teachers, clerks, artisans, and others who are employed during the day are supplied by evening classes and courses of lectures, the fees for each subject being about 10s. per term.

Instruction is provided for day students in chemistry, mathematics, mechanics, experimental physics, electro-technics, engineering, geology, botany, zoology, and other subjects.

FIRTH COLLEGE, SHEFFIELD.

The doors of this college are open to all, without distinction of class or sex, who are over seventeen years of age, though the limit of age may be lowered in exceptional cases. Day instruction of an advanced character is given in mathematics, physics, chemistry, biology and other subjects, and more elementary lectures are delivered in the evening on the same subjects. The chemical laboratory is open daily from 9 A.M. till 4 P.M., except on Saturdays, when it is closed at 1 P.M. The Sessional fees for laboratory instruction range from 4l. 10s., for six hours per week to 17l. for thirty-two hours per week.

THE DURHAM COLLEGE OF SCIENCE.

This college is located in Newcastle-on-Tyne, and represents the science faculty of the University of Durham. The students of the college may be matriculated students of the University of Durham who purpose taking a degree in science in that University, or they may be students of the college only. Students of the former class are expected to attend a definite course of instruction extending over two years, and embracing mathematics and mechanics, physics, chemistry, geology, natural history, French, German, and mechanical drawing, and to pass periodic examinations in the subjects of their lectures. Non-matriculated students may attend any course of lectures or laboratory instruction they desire, and may present themselves for the corresponding examinations or not, as they prefer.

The full course of lectures on chemistry extending over two years satisfies the requirements of the Institute of Chemistry as far as attendance at lectures on general and theoretical chemistry by candidates for its associateship is concerned.

The science degrees of the University of Durham, which are those of Bachelor, Master, and Doctor of Science, are open to students of this college.

Evening classes are held.

UNIVERSITY COLLEGE, NOTTINGHAM.

This institution provides education of a very high character. The student of science will here find well-conducted classes in mathematics, chemistry, geology, botany, biology, and physics. The college is affiliated to the Universities of Oxford and Cambridge, and its courses are recognised by the Institute of Chemistry. The instruction is well adapted to students wishing to graduate in science at the University of London, whether they have matriculated or not.

UNIVERSITY COLLEGE OF WALES, ABERYSTWTH.

The College is open to male and female students above the age of fifteen years. The courses of instruction are arranged to meet the requirements for degrees in Arts and Science (including the Preliminary Scientific examination for degrees in medicine) of the University of London, and for Scholar-

ship examinations at Oxford and Cambridge. The Senatus Academicus of Edinburgh University has recognised the college as an institution at which two years may be passed in preparation for the B.Sc. degree; the third year must be passed at the university. Instruction is given in the following sciences:—Mathematics, chemistry, experimental physics, biology, and geology.

The fee for the whole session, paid in advance, is 10*l.*; if paid by single terms, for the first term of attendance, 4*l.*; for the second term, 3*l.* 10*s.*; for the third term, 3*l.* in each session. The fees per term for practical chemistry, practical physics, and practical biology are as under:—

Time	Chemistry		Physics		Biology	
	s.	d.	s.	d.	s.	d.
For 6 hours' work per week ..	10	0	5	0	3	0
„ 9 „ „ „ „ ..	15	0	7	6	12	0
„ 12 „ „ „ „ ..	20	0	10	0	16	0

Students on entering the chemical laboratory are required to furnish themselves with a set of apparatus, &c., of the value of 2*l.*, and students commencing quantitative analyses must provide themselves with further apparatus, costing about 4*l.* Special courses will be arranged for those students who intend following medicine, pharmacy, agriculture, applied chemistry, or other professions in which a knowledge of technical chemistry is required. Advanced students will also be encouraged and assisted in undertaking original investigations.

UNIVERSITY COLLEGE, DUNDEE.

This is one of the latest of the many provincial colleges which have recently been founded for the purpose of providing education of an advanced character. The science subjects taught are mathematics and natural philosophy, chemistry, engineering and drawing, biology and botany. The fees are low. The University of Edinburgh has extended recognition to this College in terms of its regulations for graduation in science, and arrangements have been made with the St. Andrews University whereby students of the Dundee College may proceed to the degrees in science without any condition of residence in St. Andrews. Special attention is given to preparation for the London University degrees. There are two entrance scholarships of from 20*l.* to 25*l.* each, tenable for one year. The subjects in which competitors are examined are mathematics, Latin and English, and either Greek, French, or German. Notice of intention to compete must be sent to the Principal on or before September 21 in each year. These scholarships are available for students in arts or science, are awarded annually, and are open to all day students entering on their second year. Another scholarship of the value of 70*l.*, and tenable for two years at any university in the United Kingdom, will be open for competition next year. This is intended for students of the neighbourhood.

Classes are held in the evening as well as during the day, and the professor of chemistry makes a feature of the adaptation of his lectures to pharmaceutical requirements. Both sexes are admitted on an equal footing.

ANDERSON'S COLLEGE, GLASGOW.

Instruction is given at this institution in physics, chemistry, applied mechanics, mechanical drawing, and mathematics in the faculty of arts. Courses of lectures on technical chemistry, in connection with the City and Guilds of London Institute for the Advancement of Technical Education, are delivered by Professor E. J. Mills, D.Sc., F.R.S., "Young" Professor of Technical Chemistry. Evening classes are held in most of the subjects taught. This is one of the best technical schools in the kingdom.

ROYAL COLLEGE OF SCIENCE FOR IRELAND, DUBLIN.

At this well-known institution complete courses of instruction are given in the following subjects: Chemistry, metallurgy, &c., by Prof. Hartley, F.R.S.; mathematics, mechanics, and mechanism, by Prof. Hennessy, F.R.S.; descriptive geometry, drawing, engineering, and surveying, by Prof. Pigot, C.E.; experimental physics, by Prof. Barrett, F.R.S.E.; mining and mineralogy, by Prof. O'Reilly, C.E.; botany, by

Prof. McNab, M.D.; zoology, by Prof. Haddon, M.A.; geology, by Prof. Hull, M.A., F.R.S.; palaeontological demonstrations, by Mr. Baily, F.L.S. The fees are 2*l.* for each course, or 10*l.* for all the courses of each year, with the exception of laboratory practice and drawing. The fees for laboratory instruction are: chemistry, 12*l.* per session; physics, 6*l.* per session; biology, 2*l.* per term. Students who pass through a three years' course can, under certain conditions, obtain the diploma of Associate of the College.

MEDICAL EDUCATION AND EXAMINATIONS.

"TRUTH" ON THE MEDICAL PROFESSION.*

This is not at all a bad profession to bring a boy up to. Of course, there is no great amount of money to be made in it. I suppose that pretty well all the doctors in England who are making much over 3,000*l.* a year might go up comfortably together in the lift at the Grosvenor Hotel. But still, though there is no very brilliant money-getting in the business, or at least mighty little, yet there is a great deal of unostentatious and satisfactory comfort. And there is, speaking practically, no such thing as absolute failure. It is, indeed, not easy for the most expert surgeon to "cut up well" when he dies. But, on the other hand, the doctor who comes to grief utterly must be either a knave or a nincompoop. To all men, then, who appreciate with Defoe the "Peace and Plenty" which "are the handmaids of a middle fortune," there is a good deal to be said for doctoring, and one may note that chemists and druggists, who know more about the pros and cons of doctoring than most people, invariably bring up the most genteel of their offspring to the medical profession. It is only in cases where it is obvious that the boy will not take any kind of polish whatever that he succeeds his father behind the counter, or, perhaps, becomes a veterinary surgeon. In fact, so far as I have been able to investigate medical pedigrees (and plainly it is an inquiry somewhat delicate), I have found that in a very large percentage of cases they run thus:—1st, great-grandfather, unknown; 2nd, grandfather, oil and colour man; 3rd, father, pharmaceutical chemist; 4th, son, doctor.

Far be it from me to assert that there are no doctors whose ancestors came over with William the Conqueror. I dare say there are many. But, at the same time, I feel bound to maintain that no one can go into this subject of medical genealogy thoroughly, as I have, without meeting quite a remarkable number of (I am sure very respectable) oil and colour men. . . .

What with the parishes, and family practice, and the schools for young gentlemen and ladies, and the army and navy, there are a good many crumbs for doctors to pick up; and then, of course, there is always the off-chance of a reputation, and even a baronetcy. On the whole, I think that the doctors who never come to a reputation or a baronetcy have the best of life. The drudgery of the successful London physician, except that there is more variety in it, and less sitting still, almost equals the drudgery of the successful barrister, with worse prospects and less pay.

But the easy-going general practitioner, whether in town or country, but especially in the country, has always appeared to me to have a delightful time of it. An income of some 500*l.* to 700*l.* a year, plenty of moving about, plenty of intercourse with all sorts and conditions of men, and the satisfaction of doing a certain amount of good, and (all things considered) not much mischief, and being paid for both—these are the charms of country doctoring. I confess I like doctors. They are, for the most part, chatty, pleasant, tolerant men, easy to get on with. The fact is, it is their business to make themselves agreeable, and they get into the habit of being so, even with people who are not and have no intention of becoming their patients.

Of course, now and then a doctor may find it pay to go in for being habitually rude and a curmudgeon. Some people—women, I think, more frequently than men—rather like a

* One of the series of articles on "Our Boys." From *Truth*, Sept. 2.

bear for a doctor. But there is this to be remembered about bearishness—it wants some sort of a reputation to back it. “Rough and Ready” are nags that sometimes go well enough in the medical tandem. But Ready must always go first. A doctor must show himself expert in his business before he sets up to be impertinent out of it. Nobody will put up with impertinence in a young man just starting, and with his spurs yet to win—nobody, that is to say, except the very poor. The very poor and ignorant, I think, like their doctor to be unpleasant, just as they like the medicine to be nasty, and do not believe in it unless it is hard to swallow. When the draught is so horrible that it seems to curdle the soul, then only do they conceive that it “is taking hold,” as they say, and will do them good. But although the poor may like the physic to be bitter and the doctor domineering and rough, these are not the tastes, as a general rule, of the more profitable class of patients. Accordingly, the doctor who means to get on makes it his business to be bland himself, and sees that his prescriptions are as little offensive as the combined resources of chemistry and confectionery will allow. If the doctor can once get himself to be regarded with favour in the nursery, his fortune is as good as made; and I know more than one excellent disciple of Æsculapius who owes the nice “little plum” which he will leave behind him when he dies mainly to the judicious use of ginger and peppermint condiments, for which most females after a certain age entertain a malignant attachment. . . .

In towns, of course, it may frequently be a doctor's best policy to set up as a specialist. But the country practitioner must be an all-round man; and this reminds me to note with disapproval the practice so common among doctors who retire with a pension from the Navy of establishing themselves as general practitioners in remote parts of Ireland, Scotland, and Wales, attracted, perhaps, by the scenery or the salmon-fishing, or possibly by the fact that they have friends there. I don't care what their motives may be, such conduct is not to be justified. There is really only one class of ailment in those healthy places, and it is of a kind entirely unknown on board her Majesty's ships of war. I remember one very painful case in a Western county. The doctor, when brought to the scratch, proved nervous, and soon became completely demoralised, and, by the time the child was born, there was not a feature left to the excellent man, except the mouth (and that toothless), with which he was piteously imploring mercy from the enraged and athletic husband. If I remember rightly, the law was not invoked on the occasion; but my friend left the district, and now amuses himself with botany—in the Regent's Park. He says he feels safe there, and, of course, he has his pension.

By-the-bye, this reference to botany recalls to my mind a fact about doctors which I should have been very sorry to have omitted to mention. It is one of the most amiable characteristics of the medical profession that its followers are almost all hobbyists of some sort or other. One talks of flowers; another of reptiles and fishes: another of local antiquities. One of the best Celtic scholars I know is a doctor in large London practice, and there are several medical dabblers in this most fascinating but (from a pecuniary point of view) least profitable of all human studies. Sometimes the doctor's hobby happens to be literature, and then, occasionally—as in the case of Charles Lever and Wendell Holmes—the hobby runs away with the doctor altogether. But as a rule the doctor sticks to his profession, and only rides his hobby in his leisure hours. I know few things which keep a man's mind so sweet or his life so innocent as the possession of a hobby, and I make no doubt that this is one reason why scandals in the medical profession are, comparatively speaking, of such rare occurrence.

A doctor may very easily make a fair reputation and a good deal of money without much knowledge of medicine; for this reason, that the science of medicine is a closed book to the vulgar. When a man dies, none of the friends (unless there chance to be a coroner's inquest) know in the least degree what killed him. And if you call in some great medical gun at the last moment, the great medical gun is sure (indeed, I believe by the etiquette of the profession he is bound) to tell you that your doctor has “treated the case most judiciously.” On the other hand, when a sick man gets well, no one knows what cured him, and the doctor—who was, perhaps, on the wrong tack throughout—gets all the credit. Thus, the best—indeed, almost the only—way in

which a doctor can convince his patients that he is wise and knowing in his profession is by showing that he is a clever and well-informed man out of his profession. Of his science as a doctor they are not in a position to judge; but, if he talks sensibly about subjects which they do understand—stocks and shares, and pictures, and last night's debate in Parliament, and has fair luck with his cases—then his patients will trust and swear by him. I remember one very sad illustration of the injury which a doctor does himself who drops behind in his general information. A friend of mine who had married a wife from the County Westmeath (in those days a very “disturbed” district) came home one afternoon from the Stock Exchange, and found the lady in a terrible state of excitement, piling the fire with pill-boxes, and throwing “the mixture as before” out of window. On investigation, it turned out that the doctor had called, and in the course of conversation had innocently and casually inquired, “What is this Habeas Corpus, can you tell me, Mrs. Blank, which they talk of suspending in Ireland?” To a lady who had grown up from childhood with the Habeas Corpus perpetually suspended over her like a drawn sword, the ignorance thus displayed was too shocking. Not a drop of that man's medicines, she declared vehemently, should ever pour down the throats of her children. This shows, I think, that the sensible doctor will do well to look into a book occasionally, and to read the morning papers—but, of course, not the leading articles. This is a punishment reserved exclusively for the editor.

There is one thing in the medical profession which I have always admired very much. When a doctor who has no son to take over his patients has made himself a good practice, and begins to feel old, he can sell it, and often (but, of course, this cannot be counted upon) he can sell the purchaser too, and go and live in the country or on the continent. This period of retirement must, I think, be the happiest time of a doctor's life.

PRELIMINARY EXAMINATION.

Before entering on his career as a medical student the aspirant to medical honours must first pass one or other of the Preliminary examinations recognised by the Medical Council. The recommendations of the General Medical Council, as far as relate to the Preliminary examination, and at present in force, are as follows:—No student should be admitted to his final examination till forty-five months have elapsed since his registration. No student can be registered before he has passed an examination conducted by one of a certain number of educational bodies in the following subjects.—1. English language, including grammar and composition. 2. Latin, including grammar, translation from specified authors, and translation of easy passages not taken from such authors. 3. Elements of mathematics, comprising (a) arithmetic, including vulgar and decimal fractions; (b) algebra, including simple equations; (c) geometry, including the first book of Euclid, with easy questions on the subject matter of the same. 4. Elementary mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics. 5. One of the following optional subjects:—(a) Greek, (b) French, (c) German, (d) Italian, (e) any other modern language, (f) logic, (g) botany, (h) zoology, (i) elementary chemistry.

The following is a list of examinations held in Great Britain and Ireland, which are recognised by the general Medical Council as fulfilling the above conditions so far as regards Preliminary education, provided that in such examinations the necessary subjects indicated above have been taken by the candidate.

UNIVERSITY OF LONDON.

Matriculation examination.

UNIVERSITY OF OXFORD.

Responsions.

Moderations.

Local examinations (junior and senior).

UNIVERSITY OF CAMBRIDGE.

Previous examination.

Local examinations, junior, senior, and higher.

Oxford and Cambridge schools examination board.

UNIVERSITY OF DURHAM.

Examinations for students at end of first year.
Examination for certificate of proficiency.

UNIVERSITIES OF EDINBURGH, GLASGOW, ABERDEEN,
AND ST. ANDREWS.

Preliminary examination for graduation in science, medicine, or surgery.
Local examinations (junior or senior certificate).
Examination for degree in arts.

UNIVERSITY OF DUBLIN.

Entrance examination.
General examination, at end of senior Freshman year.
Examination for degree in arts.

QUEEN'S UNIVERSITY IN IRELAND.

Local examinations for men and women.
Entrance or matriculation examination.
Previous examination for B.A. degree.
Examination for degree in arts.

ROYAL UNIVERSITY OF IRELAND.

Matriculation examination.

VICTORIA UNIVERSITY.

Entrance in arts examination.
Preliminary examination.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Examination conducted under the superintendence of the College of Surgeons by the board of examiners of the Royal College of Preceptors.

ROYAL COLLEGE OF PRECEPTORS.

Examination for a first or second class certificate (1st or 2nd division).

SOCIETY OF APOTHECARIES OF LONDON.

Examination in arts.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS,
EDINBURGH.

Preliminary examination in general education.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Preliminary examination in general education.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

Preliminary examination.

QUEEN'S COLLEGE, BELFAST, CORK, OR GALWAY.

Matriculation examination.

INTERMEDIATE EDUCATION BOARD OF IRELAND.

Junior, middle, or senior grade examination.

ST. DAVID'S COLLEGE, LAMPETER.

Responsions.

EDUCATIONAL INSTITUTION OF SCOTLAND.

Preliminary medical examination.

And several examinations held at colonial and foreign universities and colleges, particulars of which may be got on application to either of the following:—W. J. C. Miller, B.A., Registrar of the General Council and of the Branch Council for England, 299 Oxford Street, London, W.; James Robertson, Registrar of the Branch Council for Scotland, 4 Lindsay Place, George IV. Bridge, Edinburgh; R. L. Heard, M.D., Registrar of the Branch Council for Ireland, 35 Dawson Street, Dublin.

HOW TO BECOME AN M.D.

PERHAPS the best way to give young pharmacists who are desirous of knowing how to exchange the dispensing of prescriptions for the writing of them an idea of how to become Doctors of Medicine would be to give a sketch of the course of study at one of the Scottish universities, where the majority of practitioners who hold the degree of M.D. graduate.

PRELIMINARY EXAMINATION.

The first thing to be done is to pass the Preliminary examination in general education, for registration as a medical student, as no qualification can be given until after four years of medical study, nor sooner than forty-five months after registration. This examination is held in October and in April, and embraces the following subjects:—English, Latin, arithmetic, the elements of mathematics, the elements of mechanics, and any one of the following subjects:—Greek, French, German, higher mathematics, natural philosophy, logic, moral philosophy.

The English examination includes grammar and composition, analysis of sentences, derivation and definition of common English words; and, in addition, questions in geography and history, especially English history. In Latin, translation from authors like Cicero and Livy; an easy passage from an unknown author to be translated into English; and an easy passage of English to be translated into Latin, the more difficult Latin words being given. The examination in arithmetic includes decimal fractions. In mathematics the examination is limited to the first three books of Euclid and the elements of algebra up to simple equations. In mechanics the examination is confined to first principles. In Greek translation from Xenophon, and also translation of an English passage into Greek are required. In French and German the translation of an unknown English passage into the respective language is also required. The text-books for the examinations in the other subjects are announced in the several University Calendars, to which the student is referred for precise information.

It will be seen that the Preliminary examination presents no bar to those who have obtained a good education, and is on the same lines as the Preliminary examination of the Pharmaceutical Society, though rather more difficult. As the Preliminary examination in medicine exempts from the Preliminary in pharmacy, we would advise any who may have thoughts of going in for medicine or pharmacy to endeavour to pass the former when they are fresh from school, that thus they may be prepared for either study.

CHOICE OF A UNIVERSITY.

After the student has passed in the six subjects before-mentioned, he is registered as a medical student by the General Medical Council, and can enter on the work of professional study. He must, therefore, select the university that is to be his *Alma Mater*. At present it is usual for students to remain by the same university all through their curriculum. This is not required by the rules of the university, which only require one year to be spent in attendance on its own classes, and another year at any other university giving the degree of M.D., leaving the instruction for the other two years to be obtained at other schools. It is, however seldom that a student who begins at one university in Scotland goes to another; the formation of friendships and the fear of the examinations being powerful in preventing change. The three Scotch teaching universities, for St. Andrews may be left out of account in the teaching of medicine, are now much on a level as regards the nature of the instruction and the facilities for imparting it. The students of each think their own the best, and it would be invidious to draw comparisons between the teaching staff of each; and while there is at the present time a higher level of attainment, no personalities stand out from among their colleagues in such a way as Simpson, Syme, and Christison did a generation ago. Edinburgh still attracts by its former name, and is the favourite among Colonial and English students. Glasgow being situated in a larger town, the centre of a very populous district, offers a large amount of clinical material; while Aberdeen has always maintained its reputation for thoroughness. The choice of the university will probably be determined by personal feeling and convenience. One some-

what important distinction lies in the fact that at Edinburgh the usual fee for a class is 4*l.* 4*s.*, while at Glasgow and Aberdeen it is 3*l.* 3*s.* This difference, taken along with the two extra classes which have recently been made compulsory at Edinburgh, and with the difference in the fees for the hospital attendance, is worth noting. Thus the minimum cost for class and examination fees comes to about 115*l.* at Edinburgh, 93*l.* at Glasgow, and 84*l.* at Aberdeen for the four years.

The cost of board and lodging at each of these three towns will be much the same, and may be regarded as between 5*l.* and 6*l.* a month. It can and has been done for less, but this we do not advise; the student requires good food and good lodging in a healthy locality. In counting the cost it is to be borne in mind that the medical student can rarely have the opportunity of supporting himself by private teaching. His time is too much occupied by his own studies and hospital attendance, and, moreover, there are always numerous arts students in the field. There are not many bursaries in the faculty of medicine; and not so much help can be had from this source as the arts student can obtain. There are one or two appointments to the hospitals as dispensers which can be held by pharmacists and allow of attendance at the classes at the same time, but authorities prefer to have dispensers who give their whole time to their duties. We have given here only the minimum cost, but the student will find that there are some classes which he will require, for one reason or another, to take twice, and other classes which, though not compulsory, are usually taken by most students, and are often of great advantage to one afterwards. This will bring up the cost at Edinburgh to between 150*l.* and 160*l.*, and at the other universities in like proportion.

STUDIES AND EXAMINATIONS.

In these days of stiff examination, and of much detail in the instructions in the many classes, that student who has the time and the means to spread his training over five years will find his comfort and his grasp of the subject much increased.

As the student generally begins with a summer session his first classes are botany and natural history, and he is apt to think that these have not much bearing on his future work; but they form a valuable training for his professional studies. There are class examinations twice every session, and these help him to find out his standing, and to have his knowledge ready at hand. The next winter is devoted to chemistry and to anatomy, both in the lecture-room and in the dissecting-rooms; and now he feels that he is fairly embarked on the career of a medical student. He is in his most frolicsome state—the cares of examinations yet sitting lightly upon him. He at this time begins his practical acquaintance with disease and suffering at the hospital, and fortunate is he if he does not get sick at the first sight of an operation.

The next summer is devoted to practical chemistry (testing) and to reading up for the examination in botany, chemistry, and natural history in October. Before going up for this examination he must pass in another preliminary subject in addition to the six he has passed previous to registration.

The winter session now begins, and with a lightened heart and a good conscience, if he has come safe through the ordeal in October, he attends the classes of surgery and physiology, while he still continues his work in the dissecting-room, and his study at the bedside. He usually gets attached to one of the hospital surgeons as a dresser for a period of six months, and has the opportunity of feeling that he has attained a position of very considerable importance in the work of the hospital.

His summer is taken up with the microscopic examination of healthy and diseased tissue in the practical physiology and practical pathology classes, and in the compounding of drugs and the learning of incompatibles in the practical pharmacy class. The latter is not required, however, from those who have been apprenticed to a registered chemist.

Now comes on the third winter of study, and this is generally considered to be the hardest of all. He has now to master the dry details of *materia medica*, and the puzzling principles of pathology, at the same time keeping up his anatomy and physiology for the examination in these four subjects in April; while his time is fully occupied in hospital

by attendance on clinical lectures and clerking in the surgical wards.

The fourth summer finds him safely over the Rubicon of the second professional examination, and beginning to practise a little on his own account by attending dispensary patients at their own homes. He now associates with the law students by attendance at the class of Medical Jurisprudence, and is thus fitted to cope with any medico-legal emergency he may be confronted with in after years. He has before this discarded the surgical wards of the hospital as being too elementary for him, and spends his time in the medical wards receiving instruction in the methods of investigating the physical signs of disease, or examining the proofs of diagnostic accuracy in the post-mortem room.

His last session approaches, and he begins to look forward to the Final examination. He attends lectures on midwifery and on the practice of medicine, and finds that he has entered on a truly wide field. He continues his attendance on clinical lectures and his work in the hospital and dispensary, and in addition undertakes the responsibility of assisting the entrance into the world of new patients, and has thus a slight foretaste of the anxious and fatiguing work of the general practitioners.

The fifth summer finds him attending the asylum, but his time is almost entirely occupied with the various stages of the Final examination, and after this is over he is one of the happiest mortals alive.

GRADUATION.

The capping day is to the medical student the most important day in the year, when in the presence of admiring friends and relatives, and mayhap followed by the sweet glances of bright eyes, he receives the degrees of M.B. and C.M. (Bachelor of Medicine and Master of Surgery) at the hands of the Chancellor of the University, who holds an old cap like a large tam-o'-shanter over his head, and pronounces the magic words.

Our friend is, after registration, for which he pays 5*l.*, legally qualified; but has two years to wait before he can take the degree of M.D. Some content themselves with the Bachelor's degree, and immediately settle down to practise; but the greater number endeavour to obtain hospital appointments, or assistantships with general practitioners, while others again enjoy rest and relaxation after study as surgeons on board ocean passenger ships.

A certain number every year prepare for the examination for admission to the army, navy, or Indian medical service; others go to the Continental schools of medicine for the purpose of following out particular studies. Some prefer to wait a year or two before doing this, and thus knowing more of practical work are better able to profit by what is taught.

Our young graduate, after having spent two years or more in the actual practice of his profession, having attained the age of twenty-four, and having either now or previously passed in Greek and logic or moral philosophy, hands in his Thesis, which must bear evidence of original research; and if this be approved of, he receives the long-coveted degree of Doctor of Medicine.

The foregoing sketch will show that the course of study is one requiring a considerable amount of brains, and above all of diligence; the increasing severity of the examinations has had the effect of illustrating the law of the survival of the fittest, by lessening very considerably the representatives of the type of Bob Sawyer.

It is well that any of our readers who may have views in the direction of medicine should count the cost both in time and money, and consider whether the expenditure is worth the ultimate result, especially in the face of the fact that the competition is as great here as in any other profession, and that, owing to the spread of education and a levelling-up process, the social position is not what it once was. Should he decide to go in for medicine, he will find, if he is worth his salt, and has a liking for his profession, a fair livelihood, and work of the noblest kind.

EDUCATION IN LONDON.

THE student, having been duly registered by the General Medical Council as a medical student, has now to select the school at which he will acquire his professional training. If

residing in London he has a large selection of hospitals and schools of science to choose from, and it is desirable that he should spend the four years (which is the minimum period for qualification) at one school, unless he wish to take a university degree, in which case residence at the university during a part of the period is required. Assuming that he desires to take the qualifications of the Society of Apothecaries, or the double qualification of the Royal Colleges of Physicians and Surgeons, the following might be his order of study:—

FIRST YEAR.

Winter Session.—Anatomy, dissections, physiology, chemistry, physics.

Summer Session.—Materia medica and pharmacy, practical physiology, practical chemistry.

SECOND YEAR.

Winter Session.—Anatomy, physiology, dissections, practical surgery, clinical medicine, clinical surgery.

Summer Session.—Midwifery, comparative anatomy, clinical medicine, clinical surgery.

N.B.—Students should defer further attendance on lectures until they shall have passed the second professional examination.

THIRD YEAR.

Winter Session.—Medicine, surgery, clinical medicine, clinical surgery.

Summer Session.—Forensic medicine, pathological anatomy, clinical medicine, clinical surgery, diseases of women.

It is better, however, to spread these subjects over four winter and four summer sessions, although they may be taken as given and the other year devoted to walking the hospitals and private reading. In addition to the above, students are advised, during their third or fourth summer session, to attend the extra course of practical and manipulative surgery, and the lectures on mental disease and on state medicine; and in the third or fourth winter the practical course of pathological anatomy and the obstetric demonstrations. The course on diseases of the eye, and the teaching in the eye department, should be attended in the third and fourth years, and, if there be time, a short course of study on aural diseases will be very useful.

They are also strongly recommended to devote, during the whole period of their attendance at the hospital, as much time as they can spare from other engagements to clinical study in the wards and in the out-patients' rooms.

COST.

This is an important point, and in giving figures we state a fair average. The fees at Guy's Hospital are 137*l.* 10*s.* for a perpetual ticket, which gives free access to the full courses until the student is qualified, and afterwards if he chooses. The only extra class is that for practical pharmacy, so that 140*l.* covers this item of expense. Then, there are materials to be dissected, costing 12*s.* 6*d.* each "part." The student should dissect seven or eight of these. In practical chemistry there are some chemicals to pay for, and if operative surgery is taken up two guineas must be paid for half a "subject," on which all sorts of operations will be performed. Ten pounds would cover these expenses.

Then for instruments, five or six guineas at the very least must be expended on a microscope, 25*s.* on a dissecting-case, 4*l.* or 5*l.* on a pocket-case, three or four thermometers will cost a sovereign; very many students need an ophthalmoscope, and the stethoscope, formerly a much cheaper article, must now be binaural, and cost 10*s.* to 15*s.* A set of bones, which may be second-hand or a sort of heirloom from one student to another, is a very valuable help, though they are provided at the large schools. These together would amount to not less than 20*l.* Books will cost not less than 3*l.* per year.

For board and lodging 25*s.* a week is very low, and 30*s.* may be called the minimum if the student lives alone. If he rooms with another man he will save 5*s.* to 7*s.* a week. On 7*l.* a month a student is fairly well off; he ought to provide himself with ties and gloves and things of that kind, but he must come to his father for broadcloth. Many get only 5*l.* a month, and plenty do it on less, living in cheaper rooms and feeding economically. For the first year the student will be at the hospital nine months; after that he will be there

nearly all the time; the examinations and ward appointments fill up the vacations, and he must take his holidays when he can. A father expecting his son to be home three months in the year will be grievously disappointed.

SCHOLARSHIPS.

We will now call the attention of the student who has gone through a pharmaceutical course to some of the most valuable entrance scholarships at first-class medical schools, limiting ourselves to those in which the subjects are similar to those of a pharmaceutical curriculum. At St. Mary's Hospital an entrance scholarship in natural science, of the value of 100 guineas, is offered for competition; also three scholarships in natural science, each of the value of fifty guineas. The subjects of the examination are inorganic chemistry, experimental physics, and elementary biology. At Guy's Hospital there are two entrance scholarships, each of the value of 125 guineas—one in arts, the other in science. For the science scholarship candidates are examined in inorganic chemistry, zoology, botany, and physics. At St. Thomas's Hospital two entrance scholarships, of the value of 100*l.* and 60*l.*, respectively, are awarded annually, after an examination in physics, chemistry, and either botany or zoology, at the option of candidates. At the London Hospital and Medical College two entrance scholarships in natural science are offered for competition. The subjects are physics, botany, zoology, and inorganic chemistry. At King's College two "Sambrooke Exhibitions" are given annually for proficiency in mathematics, elementary physics, inorganic chemistry, botany, and zoology. At Owens College, Manchester, a "Dauntsey Medical Scholarship," of the value of about 100*l.*, and tenable for one year, is offered. The examination is in general and comparative anatomy, physiological botany, chemistry, and either mathematics or Latin.

The life of the medical student in London, though not quite the same as that of the University man, is in the more important particulars identical, and need not be commented upon in detail. One great advantage which the London student has over the provincial one is the large amount of hospital practice available in the metropolis. This is a very important matter, and almost compensates for the difficulty which the metropolitan student has in getting a degree; he may not, after qualifying at the colleges, be legally entitled to call himself "Doctor," but he has at least the personal satisfaction of having had more of the practical opportunities for making himself a doctor than is possible in university towns.

MEDICAL SCHOOLS.

The following is a list of the schools in the metropolis and in the provinces whose courses of instruction are recognised by the various qualifying bodies:—

Anderson's College, Glasgow.—Fees for lectures and hospital practice, 48*l.*

Bristol Medical School: Affiliated to University College, Bristol.—Composition fee, 63*l.* for the college, and for hospital medical and surgical practice, 36*l.* 15*s.* The Bristol Royal Infirmary contains 264, and the General Hospital 154, beds.

Carmichael College of Medicine and Surgery, Aungier Street, Dublin.—This is connected with the following hospitals: the Adelaide, City of Dublin, Cork Street (Fever), House of Industry, Meath, and others. Fee for the full course of lectures for the Royal College of Surgeons, Ireland, 58*l.* 5*s.* 6*d.*

Catholic University of Ireland. School of Medicine, Cecilia Street, Dame Street, Dublin.—Perpetual fee for lectures, 56*l.* 17*s.* 6*d.*

Charing Cross Hospital.—180 beds. Fees for matriculated students (students who enter for their whole course at the hospital), 94*l.* 10*s.*

Dr. Steeven's Hospital and Medical College, Dublin.—The hospital contains 250 beds. Composition fee for the medical school, 56*l.* 3*s.* 6*d.*; fee for hospital, 12*l.* 12*s.* for nine-months.

Guy's Hospital, St. Thomas's Street, Borough, S.E.—695 beds. Fee, 131*l.* 5*s.*

King's College, Strand, London, W.C.—Medical department; 220 beds in hospital. Fee, 126*l.* 11*s.* 6*d.*

Leeds School of Medicine (now affiliated to the Yorkshire College).—Composition fee: for lectures, 50*l.* 8*s.*; for medical and surgical practice at the Leeds General Infirmary (320 beds), perpetual, 42*l.*

London Hospital, Mile End, E.—786 beds. Fees, 94*l.* 10*s.* in advance.

London School of Medicine for Women, Henrietta Street, Brunswick Square.—Provides complete medical education for women whether they intend to practice or not. Its classes are recognised amongst others by the University of London. Fee for lectures, 80*l.*; for hospital practice (at the Royal Free Hospital, Gray's Inn Road), 20*l.* the first year, 15*l.* each succeeding year, or 45*l.* in advance, or a perpetual ticket for a further fee of 6 guineas. Dean, Mrs. Garrett Anderson, M.D.

Middlesex Hospital Medical School.—310 beds. Composition fee, 100*l.*

New Carmichael College of Medicine and Surgery, Aungier Street, Dublin.—For particulars, apply to the Registrar.

Queen's College, Birmingham. Faculty of Medicine.—This college is now associated with the Mason Science College. Composition fee, 100 guineas. Students are admitted to two hospitals with 400 beds.

Queen's College, Cork.—Fees for lectures and hospital practice, about 47*l.*

Queen's College, Galway. Faculty of Medicine.—Minimum fee for the degree of M.D., 39*l.* 5*s.* Hospital practice must be obtained elsewhere.

School of Medicine, Edinburgh.—Fee for study required for a double qualification, 100*l.*, including fee for examination.

Sheffield School of Medicine.—Perpetual fee for lectures, 45*l.* Hospital practice may be attended either at the General Infirmary (200 beds), or the Public Hospital and Dispensary (100 beds). Perpetual fee in each case, 36*l.* 15*s.*

St. Bartholomew's Hospital, West Smithfield, E.C.—750 beds. Fees for perpetual attendance on lectures and hospital practice, 136*l.* 10*s.*, or 131*l.* 5*s.* in advance.

St. George's Hospital, Hyde Park Corner, S.W.—351 beds. Fee for the whole course, 125*l.*

St. Mary's Hospital, Cambridge Place, Paddington, W.—270 beds. Perpetual fee, 119 guineas in advance; for dental students, 55*l.*

St. Thomas's Hospital Medical School, Albert Embankment, Westminster Bridge.—572 beds. Perpetual fee, 125 guineas.

The Glasgow Royal Infirmary.—542 beds. Fees for the whole course, 48*l.*

The West London Hospital, Hammersmith.—100 beds. Gives instruction in natural science and in the rudiments of medical and surgical subjects, so that the student may be prepared to take an intelligent interest in hospital practice. The fee for the complete course, including one year's hospital practice, is 26*l.* 5*s.*

University College Hospital, Gower Street, London. Faculty of Medicine.—Composition fee, 125 guineas, or 130 guineas in instalments.

University College, Liverpool, Medical Department, formerly the Royal Infirmary School of Medicine.—300 beds. The perpetual hospital fee is 42*l.*; the composition fee for lectures is 63*l.*

University of Dublin School of Physic.—Fees, for obtaining degrees of M.B., B.Ch., and Master of Obstetric Science, are—lectures, 63*l.* 15*s.* 6*d.*; hospitals, 44*l.* 2*s.*; degrees, 31*l.* Total, 138*l.* 17*s.* 6*d.*

University of Durham College of Medicine, Newcastle-on-Tyne.—280 beds; composition fees for lectures, 60 guineas, or 70 and 75 guineas in instalments.

University of Glasgow Medical School.—Total minimum expenses for M.B. and C.M., 90*l.*

Victoria University (the Owens College), Manchester.—Composition fee of 63*l.* Hospital practice at the Royal Infirmary, with 298 beds; composition fee, 42*l.*

Westminster Hospital.—Upwards of 200 beds. Fee, 100*l.*

PROFESSIONAL EXAMINATIONS.

Having selected a school and begun his studies, the student should decide upon the qualifications which he is to take. We assume that he decides upon taking the L.S.A. and M.R.C.S., as these are qualifications which are commonly taken, or the newer double qualification of the colleges.

L. S. A.

For this licence the candidate requires to pass a Preliminary examination, or, in other words, be registered as a medical student; produce class certificates in all the subjects of the professional examination, and pay a fee of 6*l.* 6*s.* The examination is divided into two parts—the Primary and the Final. They are a combination of the written, the oral and the practical.

The subjects of the Primary examination are:—Chemistry, general and practical; botany; materia medica; practical pharmacy, prescriptions and dispensing; anatomy and physiology, including dissections and demonstrations; histology, with demonstrations; and an examination on the living body. This examination may be taken after the second winter session.

The Final examination may be taken in two parts. The subjects of examination are:—Principles and practice of surgery; principles and practice of medicine; pathology; forensic medicine and toxicology; hygiene (its principles and application); psychological medicine; midwifery and diseases peculiar to women and children; surgical anatomy; surgical pathology; surgical instruments and appliances, with a clinical examination of surgical cases; obstetric instruments and appliances; microscopic examinations of morbid structure, and a clinical examination of medical cases.

Full particulars regarding the courses of study required and dates of examination will be got on application to the Bedell, Apothecaries' Hall, Blackfriars, E.C.

M.R.C.S.

Candidates for this qualification must produce certificates similar in nature to those required for L.S.A. The professional examination is divided into two parts. The first should be taken at the end of the second winter session, and the second not less than two years thereafter.

The First or Primary examination, which is in anatomy and physiology, is partly written and partly demonstrative on the recently dissected subject, and on prepared parts of the human body. The Second or Pass examination is on surgical anatomy and the principles and practice of surgery, medicine, and midwifery. This also is partly written, partly oral, and partly on the practical use of surgical apparatus and the examination of patients.

THE DOUBLE QUALIFICATION.

Students who have entered upon their study since October 1, 1884, may take the qualification of the Royal Colleges in one set of examinations. This conjoint arrangement is a very convenient one for the student. The regulations are, in addition to preliminary qualification, that the student has attended lectures, hospital practice, &c. for a period not less than 45 months. The first examination which he can take is in chemistry and physics, and materia medica and pharmacy, all of which may be passed immediately after registration as a medical student. Materia medica may, however, be taken later on. At the end of the first winter session, elementary anatomy and elementary physiology may be taken.

The subjects of the second examination are:—Anatomy and physiology. One of these or both may be taken at one time, and the candidate may proceed to them after the lapse of not less than six months from the date of his passing the first examination—i.e. after eighteen months of professional study.

The final examination comprises:—Medicine, including therapeutics, medical anatomy, and pathology; surgery, including surgical anatomy, and pathology; midwifery, and diseases peculiar to women. A candidate may present himself for examination in these three subjects or parts separately or at one time. He must be twenty-one years of age, his name must have been on the Medical Students' Register at

least forty-five months, and at least two years must have elapsed since he passed the second examination.

The examination fees amount to 35 guineas.

UNIVERSITY DEGREES.

In "How to Become an M.D." full particulars are given regarding the Scotch Universities. The other Universities which confer degrees are the following:—

Oxford.—The candidate must graduate as B.A.; then, after three years' residence, they may proceed on two occasions during the curriculum to the examination for M.B. The subjects of the first examination are organic chemistry, human anatomy, and physiology. The subjects of the second examination are medicine, surgery, midwifery, pathology, forensic medicine, and materia medica and pharmacy. The subjects of organic chemistry and materia medica and pharmacy may be taken alone, and the other subjects passed at a future examination.

After a period the graduate may proceed to the degree of Doctor of Medicine, for which purpose he is required to write a dissertation.

Cambridge.—Here the regulations resemble those at Oxford. The degree of this University is an excellent one, as the training is of a high order. The professional examinations are three in number for the M.B. degree, and the M.D. may be taken three years after graduating as Bachelor. Degrees in Surgery are also granted.

London.—The M.B. and M.D. degrees of this University are the most difficult to obtain, and consequently the most honoured degrees of the medical profession. Many brilliant men who have graduated at other Universities do not consider it derogatory to enter for the London University degrees, and to metropolitan students who have spent their whole time in London schools they are the only British degrees obtainable. For the M.B. there are two examinations, and the candidate must produce evidence of having attended classes relating to the subjects of the examinations. First, the preliminary scientific (M.B.) examination must be passed. Two years afterwards he may enter for the *intermediate*, the subjects of which are:—Anatomy, physiology, histology, materia medica and pharmaceutical chemistry, and organic chemistry. After another two years' interval he may proceed to the *final* or M.B. examination proper, of which the following are the subjects:—General pathology, general therapeutics and hygiene, surgery, medicine, obstetric medicine, forensic medicine. Surgical and medical anatomy, pathological anatomy, and pathological chemistry are included.

The University also grants degrees in Surgery, and the Doctorate degrees in both departments of the healing art are of a very high order.

Victoria University.—The M.B. degree of this University is an excellent one, and holds rank equal to that of the Scotch Universities. The nature of the examinations is somewhat like those of the North, but the arrangement more resembles that of the University of London.

These are the most important degrees of the kingdom.

REGISTRABLE QUALIFICATIONS.

The following are the various qualifications recognised as registrable by the General Medical Council:—

- Fellow, Member, Licentiate, Extra Licentiate, of the Royal College of Physicians of London.
- Fellow, Member, Licentiate, of the Royal College of Physicians of Edinburgh.
- Fellow, Licentiate, Licentiate in Midwifery, of the King and Queen's College of Physicians of Ireland.
- Fellow, Member, Licentiate in Midwifery, of the Royal College of Surgeons of England.
- Fellow, Licentiate, of the Royal College of Surgeons of Edinburgh.
- Fellow, Licentiate, of the Faculty of Physicians and Surgeons of Glasgow.
- Fellow, Licentiate, Licentiate in Midwifery, of the Royal College of Surgeons in Ireland.
- Licentiate of the Apothecaries' Society, London.
- Licentiate of the Apothecaries' Hall of Dublin.

Doctor of Medicine, Bachelor of Medicine, Licentiate in Medicine, Bachelor of Surgery, Master of Surgery, or Licentiate of Surgery, of any university in the United Kingdom.

MEDICAL EXAMINATION FEES.

Physicians and Surgeons, London: Combined diploma, three examinations, fees, 36*l.* 15*s.* M.B. Lond.: Exclusive of matriculation, which is the essential Preliminary, three examinations, 15*l.* M.D. Lond.: One more examination, 5*l.* M.R.C.P. Lond.: Examination fee, 6*l.* 6*s.*; admission as licentiate, 9*l.* 9*s.* L.S.A. Lond.: 6*l.* 6*s.*; M.R.C.P. Ed., M.R.C.S. Ed., Lic. Fac. Phys. Surg. Glasg.: Three examinations, 26*l.* 5*s.* M.B. Durham, 16*l.* M.B. Victoria University, 9*l.* M.B. and C.M. Univ. Ed., 22*l.* M.B. and C.M. Univ. Glas., 22*l.* M.B. and C.M. Univ. St. And., 21*l.* M.B. Univ. Dublin, 11*l.* M.M. or M.Ch. Royal Univ. Irel., 5*l.* Lic. K. and Q. Coll. Phys. Irel., 15*l.* 15*s.* Apothecaries' Hall, Ireland, 5*l.* 15*s.*

THE HOMŒOPATHIC SYSTEM OF MEDICINE.

At the London Homœopathic Hospital, Great Ormond Street, Bloomsbury, a course of instruction is provided in homœopathic practice, which is intended for qualified medical men as well as for medical students. The course includes hospital practice and clinical lectures, by Dr. J. Galley Blackley and Dr. J. H. Clarke; lectures on materia medica, by Dr. J. H. Clarke; and on the practice of medicine, by Dr. Dyce Brown. Composition fee for the entire course, 10*l.* 10*s.*, or each section may be taken separately. The session will be opened on October 5, at 5 P.M., when Dr. J. Galley Blackley will deliver the annual Hahnemannian oration.

DENTAL EDUCATION.

HOW TO BECOME AN L.D.S.

IN entering on this subject we may first consider the requirements necessary for a chemist who is already on the Dental Register to obtain the degree of L.D.S., R.C.S. England, Edinburgh, or Ireland; and secondly the requirements necessary for a chemist's assistant, who is not on the register, to obtain the above degree or qualification—assuming in the latter case that said assistant is assistant to a chemist and dentist who is on the register.

L.D.S. SINE CURRICULO.

A registered dentist is not compelled to undergo a curriculum of study. He is examined in the following subjects: anatomy, physiology, chemistry, materia medica, medicine, surgery, hospital practice and dental hospital practice, dental anatomy and physiology, dental surgery and pathology, and dental mechanics, the last three being special subjects. The candidate can go up for all the subjects at one examination, the fee being 10*l.* 10*s.*, or he can divide it into two examinations, taking the first three subjects for one examination, the last six being taken in the final examination, the fees being respectively 4*l.* 4*s.* and 6*l.* 6*s.* Candidates who had commenced their apprenticeship before August, 1875, are permitted to go up for examination under circumstances exactly similar to the foregoing. In both cases candidates must procure and fill up the form of application which can be had from the offices of the different colleges. Although a registered dental surgeon who desires to become an L.D.S. is not compelled to take out classes, he can better qualify himself by studying some of the more practical subjects at a dental school. Chemistry, materia medica, medicine, and physiology he can probably study at home; but it is idle to think of learning anatomy, which includes osteology, from books. The same applies to the remaining subjects. For proficiency's sake it is advisable to take out the following classes:—Practical and theoretic anatomy, a summer and winter of the practical and one winter of the theoretic; physiology, the winter session; medicine, the winter; surgery, the winter; clinical surgery, the summer; dental anatomy and physiology, the winter; dental surgery and pathology, the summer; general hospital practice, attending operations,

&c., at least six months; and attendance at a dental hospital as long as possible, two years being the time prescribed. The remaining subjects, viz., chemistry and materia medica, the candidate could work up at home. The chemist and druggist being already partially acquainted with dental mechanics, he is supposed to have the subject "at his finger ends." Candidates in above class do not require to pass any-Preliminary examination in arts.

STUDIES OF THE DENTAL PUPIL.

Candidates of the second class include those who had commenced apprenticeship with a registered dentist at any time prior to August, 1878. The only difference between them and those who have commenced since 1878 is that the former is exempt from the Preliminary examination, which the latter has to pass. Some students who do not require to undergo this examination prefer to do so in order that they may have the personal satisfaction that they are as well qualified in every way as those who must pass it. When about to begin study the candidate must register his name as a dental student. All particulars regarding this are obtainable on application to the office of the General Medical Council in London. The application for registration should be accompanied by the candidate's indenture, which must have been made out before or during the apprenticeship and stamped accordingly, otherwise it is worthless. Registration completed the candidate can begin his collegiate course. It is preferable to begin with a summer session, taking out practical chemistry and practical anatomy. In this way he becomes acquainted with the names of parts he has to learn, bones, muscles, nerves, vessels, &c.; he hears them spoken about, sees the different parts, and in that way things become familiar to him, and when he attends the winter lectures he can better understand the subjects. The student should begin by dissecting a leg or an arm. As hospital practice, chemistry and anatomy demonstrations occupy only three hours he will devote the rest of the day to practical anatomy. The anatomy rooms are generally open on Saturday, and it is advisable to spend part of the day in dissecting. In the winter session the following classes are taken out:—Dental hospital, chemistry (lectures), anatomy, physiology (lectures), demonstrations on anatomy, and practical anatomy. This means very close and busy work. The student, having dissected the upper and lower extremities during the summer, now takes the head and neck, thorax and abdomen in the winter, giving special attention to the head and neck. It is a great advantage for the student to try all the class examinations which are held during the session. In addition to giving him an idea of his progress, they form an excellent means of bringing him into form for the first professional examination, which he should be able to pass at the end of the winter session. The subjects of this examination are anatomy, chemistry, and physiology. Three hours are allowed for the written part. This examination is not very severe, but some boards give a meagre choice of questions, so that the candidate must be well prepared. The oral part occupies from a half to three-quarters of an hour, the result being handed out soon after. To a man who knows his work the examination is easy, to one who does not it is not so. Chemistry includes organic as well as inorganic.

The examinations are held four times every year, the student who fails being sent back for three months.

In the last span of professional study, the summer classes are as follows:—Dental hospital, materia medica, clinical surgery, dental mechanics, dental surgery and pathology. The classes are perhaps more than usually interesting. In the class of dental mechanics the student is taught all the different processes and the various substances used in mechanical dentistry, their uses, and their best ways of manipulation. Each process is gone through, practically, and each student has here to show that he can use his hands as well as his brains. He has to make certain pieces of work set for him to do, it may be either in vulcanite, gold, dental alloy, celluloid, or two of these substances combined. He is shown the various modes of adjusting pivots, continuous gum work, treatment of cleft palate, &c., the whole forming a course of most absorbing interest.

The winter session now comes on, at the end of which the final professional examination takes place. The subjects of study during to winter are as follows:—Practice of physic, practice of surgery, hospital practice, dental anatomy and

physiology. The dental hospital practice must also be taken out, although the student can only attend it one day per week. The vacant hours through the day should be devoted to keeping up dental surgery and physiology. The final examination is exhaustive and severe, and a candidate must know his work if he wishes to make anything of it. He must know the dentitions of the various animals and their peculiarities, be able to treat all surgical cases in general, especially of the head and neck. He must also know the distribution of the cranial nerves, and the anatomy of the head and neck, for he is again examined in these. He must recognise materia medica specimens, give their doses and uses, be able to undergo a strict examination in dental surgery and pathology, and recognise microscopic specimens when these are given. He has also to explain the use of various instruments. If the student has paid attention to his work there is no fear of him breaking down at this point, and the parchment will make him forget the worry of his curriculum.

WORK AT THE HOSPITALS.

After this general account of the course of study, we may now enter more into detail regarding the purely dental practice which is obtained during the period. For convenience sake we refer to the system which is pursued at one of the most prominent schools.

At the Dental Hospital the students are divided into two lots, the lot upstairs to-day being downstairs to-morrow. The extracting room is downstairs, the filling room above it. A room is usually set aside for operations under gas, chloroform, or ether. Patients take their turn and are shown into the extracting room, where the offending tooth or teeth are examined carefully by a student, who also takes his turn. The case is explained by one of the honorary dental surgeons in attendance, and the remedy decided upon after diagnosis. If removal of the tooth is necessary, the student whose case it is performs that operation under the direction and supervision of the honorary dental surgeon. If the tooth is to be saved, which is always attempted if there is a chance of its being so, the patient is shown upstairs and handed over to the care of the tutorial dental surgeon. This gentleman examines the case and allots it to a suitable student, if difficult to a senior, if easy to a junior student. He superintends, controls, and advises, and when necessary assists the students in the treatment of the cases. The practice at other schools is almost identical with this. Prizes and certificates of honours are given in all the classes to those who have attended the class examination and attained the requisite number of marks. Each student must provide his own stopping instruments. The total amount of fees to be paid, including examination fees, is for the complete course about 80*l.* Books, instruments, &c., being extra.

The prospectus of the various schools can be had from the Dean of each school on application. The books recommended are as follows:—Chemistry, Roscoe's; anatomy, Heath's "Anatomy" for use in the dissecting room, Gray's "Anatomy" for home reading; physiology, Kirk's "Hand-book"; materia medica—here the student has a large choice, and will know best how to suit himself as to books on this subject; dental surgery and pathology—there are two books, both of which should be studied, viz., Oakley Coles's "Notes," and Coleman's "Dental Surgery and Pathology"; dental anatomy and physiology, Tomes's book; surgery, Bryant's book, 2 vols.; or Holmes's "Surgery"; medicine, Bristowe's book. Besides all these the student should begin from the very beginning by taking as full notes of the lectures as possible, reading, correcting, and adding to them every night without fail. He will find great benefit from doing so, and they will prove useful afterwards as books of reference.

L.D.S. ENGLAND.

The foregoing account of examinational requirements applies to the Edinburgh licence; the English examination is not divided into two. It is partly written and partly oral. The written examination comprises general anatomy and physiology, and general pathology and surgery, with especial reference to the practice of the dental profession. The oral and practical examination comprises the several subjects included in the curriculum of professional education; fee, 10*l.* 10*s.* If the student can afford the time and means, he should study with the view of taking

the M.R.C.S. and L.R.C.P. as well. For this purpose it is necessary that he should first be registered as a medical student, and forty-five months' study are required for the triple diploma. There are three professional examinations, called the first examination, the second examination, and the third or final examination, each being partly written, partly oral, and partly practical.

For the first examination the subjects are:—Chemistry and chemical physics, materia medica and pharmacy, elementary anatomy and elementary physiology. The examination may be taken in three parts; fee, 10*l.* 10*s.*

The subjects of the second examination are:—Anatomy and physiology, which may be taken separately or together; fee, 10*l.* 10*s.*

The subjects of the final examination are:—Medicine, including therapeutics; medical anatomy, and pathology; surgery, including surgical anatomy and pathology; midwifery, and diseases peculiar to women. Also questions on forensic medicine and public health. This may also be taken in parts. Fee, 15*l.* 15*s.*

THE L.D.S., ROYAL COLLEGE OF SURGEONS, IRELAND.

Every candidate is required to pass a Preliminary examination and three Professional examinations. Total fees, 17*l.* 17*s.*

Dental Hospital of London and London School of Dental Surgery, 40 Leicester Square.—Founded in 1859. Dean, Mr. Morton Smale, M.R.C.S. L.D.S. Session begins October 5. A scholarship of the value of 20*l.* has been founded by Sir Edwin Saunders, and is awarded annually to the student who has obtained the largest number of first-class prizes during the winter and summer sessions preceding the July in which the award takes place. Total fee for special lectures and hospital practice, 31*l.* 10*s.* (This does not include fees for such subjects as chemistry and materia medica, which are acquired outside the hospital.)

National Dental Hospital and College, 149 Great Portland Street, W.—Established in 1861. Dean, Mr. Thomas Gaddes, L.D.S. Eng. and Edin. Session begins October 1. Total fee for the special lectures and hospital practice required by the Curriculum, 25*l.* 4*s.*; perpetual, 31*l.* 10*s.*

The general subjects and hospital practice required in addition to those taught at the foregoing dental hospitals may be taken at the following institutions:—

Bartholomew's Hospital, Smithfield, E.C.—Fee, 63 guineas.

Charing Cross Hospital, W.C.—The composition fee is 42*l.* 2*s.*

Guy's Hospital, Borough, S.E.—Fee, 63 guineas; practical chemistry, 1*l.* 10*s.* extra.

London Hospital, Mile End, E.—Fee, 42*l.*; practical chemistry, 2*l.* 2*s.* extra.

Middlesex Hospital, Berners Street, W.—Fee, 40 guineas, in one sum, or 30*l.* on entrance and 15*l.* at the beginning of the second winter session.

St. George's Hospital, Grosvenor Place, S.W.—Fees: first year, 30*l.*; second year, 25*l.*

St. Mary's Hospital, Paddington, W.—Fees: first year, 30*l.*; second year, 25*l.*

St. Thomas's Hospital, Albert Embankment, S.E.—Fee, 55*l.*

Westminster Hospital, Broad Sanctuary, S.W.—Fees, in two payments of 32*l.* 10*s.* and 20*l.*

Birmingham Dental School, Dental Hospital and Dental Department of Queen's College.—Warden, the Rev. W. H. Poulton, M.A. Fees: a composition fee of 60 guineas, payable in one or two sums, admits to the full curriculum required for the Dental Diploma (inclusive of the necessary hospital practice). If classes are taken out separately, 7*l.* 8*s.* Entrance fee, 3*l.* 3*s.*

Owens College and the Victoria Dental Hospital, Manchester.—Warden, Dr. Parsons Shaw. Fees for the necessary courses for qualification, together with the Infirmary and the Dental Hospital practice, 79*l.* 12*s.* 6*d.*

University College, Liverpool, and Liverpool Dental Hospital, Mount Pleasant.—Registrar, Mr. Frederick Rose. Fees, 52*l.* 10*s.* for lectures and demonstrations (medical and special), and for hospital practice, 23*l.* 2*s.*, payable in two instalments if desired.

Edinburgh Dental Hospital and School, Chambers Street, Edinburgh.—Dean, Mr. Bowman Macleod, L.D.S., 16 George Square. Fees for two years: hospital practice, 15*l.* 15*s.*; for special classes, 9*l.* 15*s.*; for *all* subjects required for the licence and examination fees, 75*l.* 10*s.*

Glasgow Dental Hospital and School, 56 George Square, Glasgow (formerly in connection with Anderson's College, now independent).—Dean, Mr. J. R. Brownlee, L.D.S. Eng., 220 West George Street, Glasgow. Fees: two years' hospital practice, 12*l.* 12*s.*; for special lectures, 10*l.* 10*s.*; general hospital practice and lectures in non-dental subjects, 28*l.* 7*s.* to 37*l.* 16*s.* Minimum total, 51*l.* 9*s.*, exclusive of professional examination fees.

Dental education may also be obtained at the following schools:—

Dental Dispensary and School, Octagon, Plymouth.—Hon. Secretary, Mr. E. G. Bennett. The fees for lectures and dispensary practice is 23*l.* 2*s.*

Dental Hospital of Exeter, Bedford Circus.—Hon. Secretary, Mr. Henry B. Mason. Under certain conditions pupils are taken. Fee, 5*l.* 5*s.* annually.

Dental Hospital of Ireland, York Street, Dublin.—Dean, Dr. Theodore Stack. Total fees for hospital practice and special lectures, 31*l.* 10*s.*

THE VETERINARY PROFESSION.

HOW TO BECOME AN M.R.C.V.S.

MANY a counter-sick chemist who has passed his examinations and entered into business with large hopes, and perhaps a modicum of pride at his superior attainments and advantages over other shop-keepers, feels before long that he would have done better had he gone in for a full-blown profession at once. If he has passed the Major nobody brings him anything to analyse, and his laboriously obtained knowledge of botany and materia medica must henceforth be confined to a study of the wholesale price-lists. To a man of a scientific turn, the counter and the pennyworths of hair oil and pills become irksome, and he looks around him in vain to see by what means he can escape from what has become to him a gilded cage. It is a very common thing for some chemists to look upon the veterinary profession with an envious eye. The dissatisfied pharmacist thinks of the ignorant men who bring "receipts" with an air of mystery—the said receipts being an ignorant jumble of incompatibles—and wonders how such people obtain the confidence and the money of the public, and feels that with a little veterinary experience he could do much better than the "quack."

PRESENT POSITION OF THE PROFESSION.

To make plain to would-be veterinary surgeons the means of becoming such is the object of this paper, and we may begin by making clear the present position and future prospects of the veterinary profession. There are in Great Britain and Ireland some 8,000 persons calling themselves veterinary surgeons, 2,500 of whom are qualified by examination, and the rest are farriers or "existing practitioners," that is to say, by the Veterinary Surgeons Act of 1881, persons who were then practising and had been so practising for not less than five years previous to the passing of the Act have been placed upon the register in virtue of the signature and recommendation of a magistrate. This consideration for vested interests was not intended to give any status or the title of veterinary surgeon to such persons,

but has been so liberally interpreted that, as in all similar cases, many persons have been registered who might otherwise have not been recognised as qualified to practise. This Act of Parliament, like all others intended to regulate the practise of the learned professions, is prospective in its good intentions, and will make it almost impossible in the future for anybody to get a living as a veterinary surgeon without having passed through the curriculum and obtained the diploma of the Royal College of Veterinary Surgeons.

To make a successful practitioner many things are needed besides the diploma of the R.C.V.S. A man must not be squeamish or afraid of unpleasant sights and smells. The dislike to blood and post-mortem examinations of stale subjects is never overcome by some people, and it naturally follows that such persons are incapacitated for many of the duties that fall to the practitioner; but many get over these failings through habit. He should be a man of good physique, able to ride and drive, and bear cold and exposure to bad weather, or he may make mistakes and arrive at incorrect conclusions when called upon in the night and at great personal discomfort to pronounce upon important matters; his decision in cases of contagious disease necessitates great caution and very careful observation, as he may put his clients and his county to immense loss and inconvenience, and damn his reputation irremediably. Professor Spooner used to say that every veterinary surgeon should be six feet high; but there are diminutive men more successful as veterinary surgeons than some of the big ones, and the light weight does not "make the galled jade wince" that carries him about on his rounds.

EDUCATIONAL REQUIREMENTS.

It is anticipated that before long a period of pupilage will be insisted on before admission to either of the veterinary schools, as many have left the colleges with their diplomas, sadly wanting in practical knowledge.

To the student who has not already spent time and perhaps a premium to learn the drug trade, we would strongly advise a couple of years' work with a veterinary practitioner before launching into the expense of an academical career. But, for a young man between eighteen and twenty-five who has spent some years in pharmacy, and who wishes to become a veterinary surgeon, and who has not the time or means to pass a period of pupilage, the first step is to compare the date at which he passed the Pharmaceutical Society's Preliminary examination with the date he intends to enter the veterinary college: for a rule exacts that the certificate of any examination which is to be substituted for the matriculation must not be more than four years old. There are certain minor differences to be hereafter mentioned which are observed at the Scotch colleges, but as the Royal Veterinary College at Camden Town prepares the great bulk of candidates, we will speak of it first. The certificate before mentioned must include all the pass subjects of the matriculation examination, or if not the student must pass an examination in writing, reading aloud, dictation, English grammar, English history, geography, arithmetic, and French or German or Latin. The foregoing are compulsory subjects, but he may elect to pass in any two of the following:—Euclid, algebra, quadratic equations, natural history (botany, geology, or zoology), physiology, chemistry, physics, and the Greek, Roman, or Italian languages, which give certain privileges, especially for service in the army. The college entrance fee is 45 guineas: the payment of which confers the right of attendance on all the lectures and collegiate instructions. The fee may be paid in three instalments, viz. 25 guineas on entry, 10 guineas at the end of the first period of study, and 10 guineas at the second period of study. The first instalment must, with the matriculation examination fee of 1*l.* 1*s.*, as well as the library and reading-room fee of 1*l.* 1*s.*, be paid prior to this examination.

The educational year is divided into a summer and winter session of three terms. The summer session commences on May 1, and ends June 30. The winter begins on October 1, and (with an interval of about a week at Christmas) ends on March 31. Pupils can matriculate at the commencement of either term. October is the best time to enter.

Lectures, chemical and pathological, demonstrations, and general instruction are given on diseases of the horse and other domesticated animals, including epizootics, parasites and parasitic affections; also on anatomy, physiology, his-

tology, chemistry (general and practical), materia medica, toxicology, botany, therapeutics and pharmacy, hospital practice, obstetrics, operative surgery, the principles and practice of shoeing, &c. The prospectuses of the Veterinary Colleges set forth many advantages to the intending pupil, but, read by the old soldier, it is suggestive of those post-office placards setting forth the "advantages of the army."

Besides the matriculation, or preliminary examination, there are three professional ones to be passed before the student can append the mystic letters M.R.C.V.S. to his name.

THE EXAMINATIONS AND EXAMINERS.

If he is diligent in his attendance upon lectures and the means of study at his command he will be allowed to go up for the first professional examination at the end of the first winter and summer terms, but a weeding-out process is performed by the college teachers known as the "Prelim." Each intending candidate has to pass an examination at the college to ascertain if he is fit to present himself before the august body sitting at the R.C.V.S. at Red Lion Square or in Edinburgh, and it is almost unnecessary to add that a great many are "stuck" at this preliminary canter. We will suppose, however, that the pharmaceutical candidate has run the gauntlet of the preliminary and reached Red Lion Square. Here he will be conducted into the "funking room." He is expected to present himself before the examiners in a black suit and proper appearance. Coffee and light refreshment are provided for candidates while waiting their turn. Everything is fair, and each examiner, as he sits at a separate table, is in ignorance of what success or failure the student may have met with at the other tables. The nervous candidate is put at his ease as much as possible by some kind and gentlemanly inquiry. There is an absence of hurry, and consideration for the candidate, which redound to the credit of the examiners, though "ploughed" men are not always quite willing to admit it. The result is made known as early as possible, and is not now celebrated with a drunken orgie, as was the case when veterinary students were drawn from the ranks of stud-grooms and favourite stablemen, who, without any general education, could run through the college in eighteen months. A visit to the Royal Veterinary College during session will convince anyone that the students' appearance and manners will compare favourably with those of any of the medical schools in London. The tight trousers and loose morals of a former generation are pretty well extinct, and the veterinary profession is now taking its place beside the sister art of human medicine. The subjects comprising the first examination are materia medica, pharmacy, chemistry, toxicology, and botany.

The subjects of the second examination are anatomy of the horse and other domesticated animals, physiology and histology.

At the third and last trial a practical examination is conducted, and the student is required to examine and point out the defects and diseases of living subjects submitted to him, give his version of the treatment to be adopted or the operation to be performed, and describe the method, giving his reason and describing the processes of nature in the repair of injured parts, whether by the surgeon's interference or by accident. He is also required to put on a horse's shoe and take one off—a rather laborious business when one cannot find the nail holes used by the previous candidate. It is not, of course, expected that a veterinary surgeon should be able to shoe horses, but, as it often happens that a lame case is a long way from a smithy, it is very desirable that every practitioner should be able to take off a shoe or tack one on without injury to the sensitive foot. Besides the practical examination at the college hospital he will have a theoretical examination on the following subjects:—Morbid anatomy and pathology; diseases of the horse, including veterinary medicine, surgery, and therapeutics; diseases of the other domesticated animals, including medicine and surgery; the examination of horses as to soundness, and the writing of certificates and prescriptions.

The minimum time in which, without check or failure from any cause, a student can qualify, will be seen to be equal to that required for a surgeon or medical practitioner—that is to say, one summer and one winter session—before passing the first examination; another winter before being

eligible for the second, and a winter and a summer term before the diploma can be obtained.

SCHOOL FEES AND PRIVILEGES.

There is a scholarship of 25*l.* per annum, tenable for two years, the Coleman prize medals, and class distinctions; and here the veterinary student's opportunities compare very unfavourably with the medical. The profession of human medicine is old and well endowed, and to the student of good ability and persevering habits many prizes are open, leading in after years to hospital celebrity, and often to fortune. Again, many a chemist has qualified by holding a situation as dispenser and assistant to a doctor, with time to attend lectures, &c.; but the whole time of a veterinary student is occupied, and he had better not enter the profession if he thinks it any easier or less costly than to obtain a medical degree. The cost of living in London is doubtless greater than in Edinburgh or Glasgow, and there are few students who can obtain the necessary quietude and freedom from interruption to study at home or as boarders. The best and cheapest method is for two or three earnest workers to share rooms and expenses of living. The cost of living is about the same in Edinburgh and Glasgow. Two students generally share a sitting-room, each having a bedroom. Each pays about 10*s.* a week, exclusive of board. A bedroom only costs from 5*s.* to 7*s.* From 15*s.* to 20*s.* a week may be reckoned as the cost of board and lodging in any of the Scotch cities.

There are two colleges at Edinburgh, viz., Dick's Royal Veterinary College—of which Mr. Walley is principal—the other Principal Williams's New Veterinary College, in Leith Walk, which has been quite recently built. A third exists at Glasgow under the presidency of Professor McCall, while the whole of England contains but one. London graduates are apt to suppose that the Scotch colleges are multiplied at the expense of efficiency, and somehow or other a London graduate generally gets the preference shown him in the matter of appointments. The examinations in Scotland are conducted as in England by a Board of Examiners appointed by the Royal College of Veterinary Surgeons. It is no argument against the Scotch schools that men who have failed in London have succeeded in Scotland, though we cannot recollect a "ploughed" man from Scotland getting through in London. It is said by Edinburgh men that they have practical advantages over the London students, inasmuch as they have opportunities of assisting surgeons who have large practices, and their teachers treat them as if they were private pupils. It is certainly noteworthy that the majority of students at the Scotch colleges are Englishmen, and a large proportion of the teachers are also Englishmen or Welshmen. Besides the fees mentioned above, there are the expenses of a microscope, five to ten guineas (these are provided for use in college by the Scotch principals), subjects for dissection, books, &c.; an economical student could make 20*l.* cover them, but this would not admit of his attendance on private classes, or "grinds" as they are called.

The successful student, if under twenty-six years of age, may elect to enter the army, and become a poor gentleman, holding the rank of lieutenant and her Majesty's commission as a British officer. The pay commences with 250*l.* per annum and forage allowances, and he is expected "as an officer and a gentleman" not to indulge in horse-dealing or add to his slender income by private practice. At the end of ten years, unless he is specially re-engaged, a lump sum of 800*l.* is presented to him, and the door of glory closed. There are loud complaints in the profession about this, as an army training is not the sort of thing to fit a middle-aged man for private practice. Promotion is possible, but "superfluous lags the veteran on the stage." Very few remain long enough to reach maximum pay of 1*l.* 5*s.* per day, and the rank of lieutenant-colonel.

There is a good prospect for veterinary surgeons since the farriers now registered are dying off and no fresh ones taking their places. The number of qualified veterinary surgeons is quite inadequate to the work if there were no farriers.

In conclusion, a young man of energy and perseverance, fond of outdoor exercise and of horses, may do well in the veterinary profession. The chief mistake made by outsiders is in supposing that a long and severe course of study is not necessary.

THE NEW VETERINARY COLLEGE.

Leith Walk, Edinburgh.

Principal, Professor Williams, F.R.S.E., F.R.C.V.S., &c. A preliminary examination is required. Matriculation fee, 10*s.* 6*d.* This school (recently housed at Gayfield Square) is conducted in new premises with all modern conveniences. In April of each year the student who has made the highest marks before the board of the Royal College of Veterinary Surgeons in his first and second examinations will be entitled to a gold medal given by Professor Williams, value 20*l.*, or, if he elect, to the money, which will be paid at the termination of his college career. Fees for attendance on all classes and lectures, including clinical instruction and registration, during the prescribed three years' course of instruction (three winter and two summer sessions) is 45 guineas, payable in one sum, or in three instalments. The next session will commence on October 27.

GLASGOW VETERINARY COLLEGE.

83 and 85 Buccleuch Street, Glasgow.

Principal, Professor McCall, F.R.C.V.S. Secretary, A. S. McQueen, to whom application should be made. The usual preliminary examination is required, fee, 15*s.* A bursary of 20*l.*, or a gold medal the value of that amount, will be awarded in May of each year to the student who has obtained the highest aggregate marks in his first and second professional examinations before the board of examiners. Course of study extends over two years and a half. Fees, 41 guineas, or 44 guineas if paid in three instalments. The next session begins in the last week of October.

ROYAL (DICK'S) VETERINARY COLLEGE.

Clyde Street, Edinburgh.

Principal, Professor Thomas Walley, M.R.C.V.S. This college is under city patronage, and is now to be considerably extended by the reconstruction of the building. A preliminary examination is required. Fees, 40 guineas, payable in one sum or in three instalments (exclusive of examination and registration fees). The next session will commence on October 28.

ROYAL VETERINARY COLLEGE.

Great College Street, Camden Town, N.

Principal, Professor Robertson, F.R.C.V.S. Secretary, Richard A. N. Powys. A scholarship of 25*l.* per annum, tenable for two years, will be awarded at the close of the summer session of 1887. Students are required to attend two summer and three winter sessions. Fee, 45 guineas, payable as a whole or in three instalments. The winter session will commence on October 1. Introductory address by Professor Robertson at 1 P.M.

ROYAL AGRICULTURAL COLLEGE, CIRENCESTER.

The object of this institution is by means of a college and farm to provide such a course of special instruction as will be most useful to the agriculturist. The prescribed course of instruction is at once practical and scientific. The following are the obligatory subjects:—Practical agriculture and dairying, chemistry and physics, geology, botany and zoology, mechanics, veterinary surgery, mensuration, land surveying and estate engineering, and book-keeping. The college contains well-appointed chemical, physical, and biological laboratories, and workshops and a veterinary hospital are attached. The farm covers about 500 acres. The fees for in-students are 135*l.*, and for out-students 75*l.* per term. The degree of Member and Associate of the College is obtainable after a two years' course by those duly qualified students who have satisfactorily passed all the Preliminary and Final examinations.

EXTENSIVE ADVERTISING. — A printing order recently given by the proprietor of a popular remedy was for no fewer than 80,000,000 32-page pamphlets and 400,000,000 4-page circulars, at a cost of very nearly 120,000*l.* It is said that this order will only provide the material for one year's circulation.

Scientific Notes :

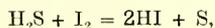
On Chemistry, Pharmacy, Botany, Materia Medica, &c., Original, Selected, and Translated.

STARCHES WHICH DO NOT FORM BLUE IODIDE.*

IN *Oryza glutinosa* Kreuzler and Dafert found a starch which behaves with iodine differently from rice-starch. In the grains of *Panicum miliaceum glutinosum*, a Chinese plant, the starch is merely coloured yellow to red-brown by iodine, and never goes black with excess of iodine, but rather brown. Heat causes the colour to disappear, but the colour returns on cooling. Aqueous extracts do not contain dextrin. Bretschneider informs the author that there are two varieties of this plant in China, both botanically the same; but from the one, "Tsi," when mixed with water and baked, a brittle mass may be made; whilst from the meal of the other, "Ihu," ordinary bread is formed.—*Journ. Chem. Soc.*

STANDARDISING IODINE SOLUTIONS.

THE method at present in use for standardising iodine solutions, exact though it undoubtedly is, labours under the disadvantage of being somewhat complicated. The following simple method, which is based on the well-known fact that sulphuretted hydrogen acts on iodine with production of hydriodic acid and separation of sulphur, according to the equation:—



is proposed by W. Kalmann (*Ber.* 19, 728) for determining the amount of iodine in a solution:—A certain volume of that solution is diluted with water and treated with sulphuretted hydrogen until completely decolorised. To the milky fluid thus obtained methyl-orange is added, which gives no reaction with sulphuretted hydrogen, and the hydriodic acid may then be titrated with one-tenth normal alkali solution. As 1 cc. of the latter represents 0.0127 gm. I, the amount of the iodine in solution is readily calculated. A few examples of the working of this process are appended, and they fully bear out the statement as to its exactness.—*Journ. S. C. I.*

THALLOQUIN TEST FOR QUININE.

VULPIUS recommends the following method of producing this well-known reaction, the object being to dispense with chlorine water, which must be fresh in order to give a distinct reaction. Into a test-tube of about 25 c.c. capacity 0.02 gramme of chlorate of potassium is placed, four drops of hydrochloric acid and two of water are added, and the whole carefully and gently heated until chemical action ceases; then 5 c.c. of water is poured into the tube and well shaken up. Next 0.01 gramme of the quinine salt is dissolved in the mixture, which is further diluted with 5 c.c. of water, and finally 1 c.c. of ammoniac solution is carefully poured on the surface. The distinctive colour of thalloquin appears at the point of contact and gradually extends downwards. The test has to be performed in the manner detailed, otherwise unsatisfactory results may be obtained.

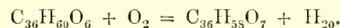
CHEMICAL HYGROMETER.

HELICES of paper coated with gelatine, and impregnated on opposite sides with substances having very different hygroscopic properties, have been employed by M. Nodon as self-registering hygrometers. It is not difficult to understand how such a coil would undergo changes of shape under the influence of alterations in the state of humidity of the circumambient atmosphere. These movements of the helix could be translated, by means of a pen of capillary tubing, on a chart moving at a definite rate. If the atmospheric humidity remained the same the pen would merely write a straight line, whilst variations in the hygroscopic state would be manifested by varying curves.—*Lancet.*

ACORINE.

DR. THOMS, of Neu Strelitz, has lately devoted considerable study to the chemical constitution of the *Acorus calamus*, particularly to the isolation of the characteristic bitter

principle to which the name of acorine has been given by Dr. Faust. He proves that acorine is not an alkaloid, but a glucoside, which may be split up into glucose, a resin, *acoretine*, and a volatile body. Acorine ($C_{36}H_{60}O_6$) is a soft substance, of a honey-like appearance, which does not solidify at 48°. Its decomposition into glucose and other bodies by acids and alkalies can only be properly accomplished in an atmosphere of hydrogen. Steam, emulsin, diastase, and yeast cause the same decomposition. The volatile principle is a terebene having the formula $C_{10}H_{16}$. Acorine when exposed to the air is oxidised into acoretine and water:—



But in an air free space it resolves itself into glucose and the terebintlinate body. Calamus root contains another alkaloid named calamine.

COROSOS OIL.

SEVERAL months ago attention was called in American journals to the probability that the oil extracted from corosos nuts, which grow in abundance in Honduras, might be found useful in soap-making. A quantity had been sent to New York for experiment, and nothing more was heard about the matter. During the recent exhibition at New Orleans corosos nuts were exhibited by the Commissioner of Honduras, and a firm in one of the Southern States entered into a contract for the delivery of a certain number of tons. About seven hundred sacks have already arrived, and have been converted into fine salad oil and soap stock, the glycerine having been extracted from the latter. Corosos oil is now an article of commerce in New Orleans, and it is said to yield an excellent quality of glycerine. In order to be acceptable among soap manufacturers the price is placed lower than other vegetable soap stocks. The business is said to be more profitable than the import of coconut and palm oils, but as yet corosos oil cannot compete with cotton-seed oil for soaps.

LOBELIA NICOTIANEFOLIA.

THIS herb is indigenous to southern and western India (see p. 41). It has been examined by Dr. H. V. Rosen, of Dorpat, who has succeeded in isolating from it *lobeline*, a liquid alkaloid, identical chemically and in physiological action with the alkaloid *lobeline* obtained from *Lobelia inflata*.

CAY-CAY WAX.

MR. J. B. VIGNOLI obtained in 1885 a specimen of cay-cay wax, which is a product of *Iringia Oliveri*, N. O. Simarubaceæ, according to Mr. Pierre, director of the botanic garden at Saigon. Mr. Vignoli (Thèse, Montpellier, 1886) gives a full botanical description of the tree, which is common in the forests of eastern Cochin China, and has also examined the anatomical structure of the branches, leaves, and fruit. The fruit is an ovoid yellow drupe, of the size of a lemon, and with a fibrous mesocarp, and contains a seed of the size of an almond, having a brown, smooth, and brittle testa, and containing a large embryo and a small quantity of albumen. For preparing the fat, the seeds are exposed by the natives to the sun for some time, then bruised, exposed to steam, and then expressed, the yield being about 20 per cent. of the fresh seeds. The dried seeds weigh on the average 0.7 gm., and on being treated with carbon disulphide yield 52 per cent. of fat.

The cakes of cay-cay wax are usually in the form of truncated cones, weighing about 2.5 kilos. It is of a greyish-yellow colour, unctuous to the touch, and has a peculiar odour, becoming disagreeable and stronger when heated. It is readily soluble in ether and carbon disulphide, also in hot alcohol, but dissolves sparingly in cold alcohol. At 37° C. it becomes soft, melts at 38°, and solidifies again at 34°. It is easily saponified, and yields 68.7 per cent. of fatty acids, 30.2 of which is oleic acid, the remaining acids being probably stearic, and several of those liquid at the ordinary temperature.

Cay-cay wax is only used for candles by the natives, bamboo joints being the moulds. These candles give a light somewhat inferior to that of stearin candles, and when burning do not give off a disagreeable odour.—*Amer. Journ. Phar.*

* F. W. DAFERT, in *Bied. Centr.*, 1886, 133-134.

Friedrichshall.

THE WELL-KNOWN APERIENT MINERAL WATER.

IMPORTANT NOTICE.

By reason of an improved method of caption, by which dilution is avoided FRIEDRICHSHALL WATER will be found now to be of CONSIDERABLY GREATER STRENGTH and EFFICACY than heretofore.

The ordinary dose is a large wineglassful (4 ounces) taken fasting. Most efficacious and more acceptable to the palate when heated or mixed with an equal quantity of very hot water.

"I know nothing at all equal to Friedrichshall. The LONGER it is taken the SMALLER is the quantity necessary to effect the purpose."

SIR HENRY THOMPSON, F.R.C.S., Lond.

Of all Chemists and Mineral Water Dealers. [2]

SEE SEABURY & JOHNSON'S Advertisement of INDIA-RUBBER POROUS AND SPREAD PLASTERS on page 39.

SILICATED CARBON PATENT MOVABLE BLOCK FILTERS.

SEE ADVERTISEMENT, PAGE 34.

HEARON, SQUIRE & FRANCIS,

Wholesale and Export Druggists.

Established



1714.

FOOD FOR INFANTS IN BULK.

PHARMACEUTICAL PREPARATIONS IN VACUO.

MEDICATED BISCUITS—"HERON," Nos. 1, 2, & 3.

5 COLEMAN STREET, LONDON.



18s. per cwt. net, bag included; in 7, 14, 28, 56 lbs., 20s. per cwt., delivered free in London, and in 1 lb. tins, 5s. per doz. BEST QUALITY; NO OIL EXTRACTED. Carefully cleaned and ground so as to retain the natural colour of the Seed without being heated. [2]

6 S. MUMFORD, STEAM MILLS, FARRINGTON ROAD, LONDON, E.C.

EDITORIAL NOTES.

PHARMACEUTICAL EDUCATION ABROAD.

PHARMACY on the Continent differs from that in Great Britain in many particulars, and in none more than in the educational requirements. Stringent as to the elementary training of those who enter the profession—for there the pharmacist has a professional status—the stringency continues and develops during the pupilage and the subsequent

collegiate training of the assistant, and in some cases even follows him after his first graduate career and prevents him starting in business until there is a legitimate opening for him. All this is very different from the perfect freedom which we have in this country. The student who feels disposed to complain of what is required of him here may derive some comfort by comparing his lot with that of his Continental confrères.

The following table shows the minimum time in which a pharmacist can be produced in the countries named:—

Country	Years passed in a pharmacy	Years passed as a student.	Total number of years required.
France	3	3	6
Belgium	2	2	4
Germany	5 to 6	1½	6½ to 7½
Austria	5	2	7
Russia	5 to 6	1½	6½ to 7½
Italy	1*	3	4
Switzerland	4	3	7

* The year is passed in a pharmacy after the three years' university course.

In France there are two grades of pharmacists, "pharmacien de la première classe" and "pharmacien de la seconde classe." Those who aspire to the higher degree must remain at school until they have passed the examination required for the title of "bachelier ès sciences" or "bachelier ès lettres," which cannot be obtained till the pupil is sixteen years of age. The candidate who intends only to become "pharmacien de la seconde classe" may leave school when he has passed what is known as the "classe de quatrième." After this the education for both grades is the same. Three years must then be spent in a pharmacy, after which a practical examination must be passed. The student then goes through a three years' course in one of the schools of pharmacy in France, passing an examination at the end of each year. Candidates for the "première classe" diploma must pursue their studies at one of the higher schools of pharmacy, of which there are six. The examination of the first year is on chemistry (including practical analysis), toxicology, physics, and pharmacy; that of the second year is on materia medica, botany, zoology, hydrology, mineralogy, and the practical use of the microscope; that of the third year is a four days' practical examination on the making of chemical and pharmaceutical preparations. The new "Ecole Supérieure de l'Pharmacie," in the Avenue de l'Observatoire, Paris, is the largest institution of the kind in the world.

In Belgium, after an apprenticeship, two years must be passed at one of the four schools of pharmacy, which are connected with the Universities of Brussels, Liège, Louvain, and Ghent. The student may then present himself for the examination for the "Candidature en pharmacie." The subjects are chemistry (general and practical), physics, botany (general and medical), mineralogy, and geology. If successful he becomes a qualified assistant. If he wishes to become a full-fledged "pharmacien," he must study two years more at a recognised school and pass another severe examination.

In Germany a stringent preliminary examination must be passed, after which the candidate serves three years as an apprentice in a pharmacy, unless he has passed the highest examination in the classical school; in that case a period of two years satisfies the requirements of the law. At the expiration of his apprenticeship he must submit himself to a written, practical, and oral examination in chemistry, physics, botany, materia medica, prescription reading, &c. He is then required to spend three years as an assistant in a pharmacy, and after that to attend the lecture and laboratory courses in one of the universities for at least a year and a half. He may then present himself for the final examination,

which is of a very broad character, embracing all subjects having any bearing on pharmacy. Although he is then fully qualified, he cannot have a pharmacy of his own until a vacancy occurs, the number being limited by the Government.

In Austria the would-be pharmacist must attend a classical school for four years, and at the end pass an examination. He must then spend at least three years as an apprentice to a pharmacist. At the expiration of his apprenticeship he is required to pass an examination before a board of pharmacists. This ordeal over, he must be an assistant for two years, and then a student at one of the universities for two years. The subjects of study for the first year are physics, chemistry, mineralogy, botany, and zoology. The second year is devoted to pharmaceutical and practical chemistry, and materia medica. At the end of each year an examination is held, and the candidate, if successful, becomes at the end of the second year a qualified pharmacist, with the title of "Magister der Pharmacie." The degree of "Doctor der Pharmacie" may be obtained by those who have passed all the classes in the Gymnasium (high school), and have studied chemistry for one year after obtaining the degree of "Magister."

In Russia the candidate must serve an apprenticeship of two or three years according to the standard he has passed in the classical school. At the expiration of this period he must pass an examination similar to the corresponding German one. He must then gain three years' experience as assistant to a pharmacist, after which he is required to devote his whole time for at least a year and a half to the study of pharmaceutical subjects in a university where he may become a candidate for the qualifying examination, the subjects of which are chemistry, mineralogy, physics, zoology, and materia medica. The candidate for the degree of "Magister Pharmacie" must continue his studies for at least another year, and submit himself to far more stringent examinational tests.

In Italy there are two grades of pharmacists—the "farmacista" and the "dottore in chimica e farmacia." The course of study for the former extends over four, and for the latter over five years. The aspirant to a pharmaceutical qualification must show that he is fit to enter the highest class of the classical school. He then proceeds direct to a university, where, if he is content with the lower degree of "farmacista," he need only spend three years, but must pass an examination satisfactorily at the end of each year. The subjects for the first year are inorganic chemistry, botany, and mineralogy; for the second year organic, pharmaceutical, and toxicological chemistry, materia medica, and botany; for the third year the studies are the same as for the second, but are more advanced. He must then be engaged for one year in practical pharmacy and pass another examination. Candidates for the grade of "dottore" must pass four years at a university. The first two years are devoted to the study of various branches of chemistry, botany, materia medica, mineralogy, zoology, geology, and toxicology. The second period of two years is passed mainly in the study of chemical analysis and some special branch of natural science selected by the candidate. This course being passed through and the examinational requirements satisfied, a year has to be devoted to the acquirement of practical knowledge in a pharmacy. An examination must then be passed of a much broader character than that for the degree of "farmacista."

In Switzerland a severe preliminary examination and a three years' apprenticeship are necessary before the student can present himself for the first technical examination. The subjects of this examination are:—Translation from the "Pharmacopœia Helvetica," practical dispensing, the making

of one chemical and one galenic preparation, pharmaceutical chemistry, elementary physics, systematic botany, materia medica, and posology. The successful candidate must then spend a year as assistant to a pharmacist, and at least two years as a student at a university before admission to the final examination, which is partly practical, and partly vivâ-voce, and includes all the subjects of a pharmaceutical education of the very highest class.

MEDICAL EDUCATION ABROAD.

IT is generally admitted nowadays that the education of the medical student is not complete until he has acquired some Continental experience. There are opportunities on the Continent for clinical study and for the investigation of physiological phenomena which cannot be obtained in this country. Apart from that education there is State-aided, and is generally of a superior type. Classes are small, teachers give individual attention to students, and the English-speaking student has opportunities afforded to him of studying types of human character which he could not have elsewhere, and which is certain to prove of value in his professional career. We, therefore, briefly refer to the more prominent schools on the Continent where a post-graduate course may be taken.

The most popular, and, taking it all round, the best school is that of Vienna, where courses of instruction on such subjects as laryngoscopy, ophthalmology, diseases of the ear, and of the skin, &c., can be had. These classes are conducted in the General Hospital, and are entirely practical: they last six weeks, and cost from 30s. to 2*l.* each.

The great advantage which Vienna and many other Continental schools possess is the large amount of clinical practice which is obtainable. This is especially seen in the large number of post-mortem examinations made everyday in the General Hospital at Vienna. There is no great difficulty in regard to the language, a comparatively slight knowledge of German being sufficient to follow the lecture; and most of the teachers are only too willing to explain anything in English. Many students wisely spend a few months first in some of the smaller German university towns: for example, Halle, Würzburg, Giessen, Marburg, where there is not an English-speaking community, and where one is forced to speak German. At these smaller towns board in a good German family can be had for 5*l.* a month, and to one living as a student the cost will not be so much. Heidelberg, whose quincentenary has just been celebrated, is a favourite resort of American students. Berlin is also a school that attracts many from this country, and has some well-known names associated with it—Virchow, Du Bois Reymond, while Koch in the Government Public Health Office has come into world-wide fame. In Berlin and Vienna the cost of living is rather more than at the smaller towns. Prague is a favourite place for study, where the living is cheaper than at Vienna. On the Strasburg University the German Government have spared no expense. There Dr. Fluckiger, so well known to all pharmacists in connection with his pre-eminent pharmacognostic studies, is one of the professors. The education here is sound, and the cost of living exceedingly moderate. The young graduate often takes advantage of the well-equipped laboratories attached to these universities for the purpose of carrying out original researches, the results of which are generally embodied in his thesis for the degree of M.D. The French schools are not at present so popular among young graduates as the German: the teaching is not so well organised, and the students have not the opportunity of seeing so much, nor of obtaining so much practical instruc-

tion; but the fame of Charcot, Tarnier, Jaccoud, and others always attracts older graduates who have a short time to spend in the Paris hospitals.

The University of Dorpat in Russia offers special facilities to the medical student who may lay claim to proficiency in chemical knowledge, but it is little sought after by English medical students, and is, indeed, better suited for the student of pharmacy of an advanced type. Those who can afford the cost of a year's study on the Continent will find in their subsequent career that the money has been well spent, and that they will be fitted, if fortune favours them, to take the most responsible positions in the practice of medicine.

MUTILATING PATENT MEDICINE STAMPS.

ON Thursday the case brought by the Crown against two London chemists for mutilating patent medicine stamps was decided in the Central Criminal Court, the Recorder, in consultation with Mr. Justice Wills, having come to the conclusion that the present section of the Inland Revenue Act, 33 & 34 Vict., under which the Crown proceeded against the prisoners, was intended to apply to much more serious offences than that which the prisoners admitted that they were guilty of. The decision is a very common-sense one and will give satisfaction to all engaged in pharmacy.

We might question the wisdom of the authorities in proceeding against a person, himself of good character and belonging to an eminently respectable and law-abiding class of citizens, for an offence apparently so small, and committed in thoughtlessness. But it appears from what fell from the solicitor for the prosecution that the offence is a common one. If this be so, the present case will bring it home sufficiently to all concerned that halves or other portions of a stamp, whether or not representing the duty payable, may not be affixed to any package of a proprietary medicine. It is conceivable that by making a three-halfpenny stamp do for two sixpenny packages of a medicine, the revenue is defrauded; but halving a threepenny stamp for the same purpose does not appear to be so serious an offence, for the revenue gets its due. However that may be, there is no excuse for any person committing so ridiculous an act.

The decision in the Wall case will, probably, prevent procedure in future under the penal clause of the Act, but the possibility of such heavy penalties as that inflicted on Thursday being incurred again remains, and a good lesson for the future has been taught.

BRITISH SPECIALITIES IN ROUMANIA.

SOME weeks ago we called attention to the new customs tariff adopted by the Roumanian Legislature, by which the duties on pharmaceutical products and drugs are very materially increased. We have since, through the courtesy of Sir William White, Her Majesty's representative at Bucharest, received a report, especially drawn up for THE CHEMIST AND DRUGGIST, conveying some further information on the present position of the trade in foreign specialities in Roumania. The new tariff is framed admittedly with a view to diminish, and, if possible, to altogether prevent, the importation of foreign pharmaceutical preparations and specialities, and so to compel pharmacists all over Roumania to draw their supply from Bucharest. In that capital there flourish a few piratical firms of "chemists and druggists," who make it their business to imitate all foreign medicinal specialities, whether British, French, or German, and who flood the

country with their inferior concoctions under forged labels. The imitators are shielded by artificial difficulties thrown in the way of foreign proprietors of specialities to compete upon equal terms with the Roumanians.

In the first place, the Roumanian Government exact a fine of 100 frs. for the privilege of introducing a speciality into Roumania. Thus the makers of Cockle's pills, Eno's salt, and others pay 100 frs. for the privilege of allowing their goods to be sold. Holloway pays double that amount, once for his pills and once for his ointment. This fine is, of course, an unimportant one, and would not of itself prevent the importation of foreign specialities, but the Roumanians place upon all specialities and compound drugs imported into their country a stiff customs duty, and then proceed to levy that duty in a most exacting and unfair manner. The tariff provides for an allowance for tare of 7 per cent. off the gross weight of each parcel imported. But as the actual tare on such goods as specialities is generally a very heavy one, the 7 per cent. allowed is not by any means sufficient. The result is to mulct the British importer in a total charge of from 45 to 50 per cent. on the declared value of his goods. We say the British importer, for his Austrian rival is wise in his generation, and contrives to bring the total charge down to about 20 or 25 per cent. by packing his goods simply in paper, or, if liquid, in thin jars and bottles, the whole being packed in the lightest possible cases bound with wood hoops. The British merchant, on the other hand, with that love of solidity and disdain for details which are among his characteristics, sends his wares in heavy earthenware jars, or in weighty bottles or boxes, which are surrounded by straw and other filling, and accompanied by any number of testimonials and directions for use, generally couched in a language which the stranger understandeth not. British specialities were very largely used in Roumania until the promulgation of the new tariff, but a good sale would still exist for them if only the shippers would study the special requirements of the market in the way of packing.

Simple chemicals which the Roumanians require in the preparation of imitation specialities are let off comparatively easy, with a tax of 8 per cent. *ad valorem*; and a few, such as sulphate of quinine, are duty free. British drugs and chemicals enjoy a reputation in Roumania far beyond those of any other nation, but as yet their sale is limited, owing to the enormous increase upon the cost by the freight and duty.

Prescribing last week as occurring in the east end of London, Chemists. Commenting on the case which we reported *Truth* says:—"Dr. Diplock expressed a forcible opinion at a recent inquest against the practice of poor people going to chemists for advice and medicine. There is a good deal more of the doctor than the coroner in this utterance. Chemists know just as much as doctors about the majority of complaints from which humanity suffers, and as they are prepared to dispense their knowledge gratis, charging only for the drugs they prescribe, they have *pro tanto* the advantage over doctors properly so called. It is natural, therefore, that doctors, whether coroners or not, should entertain a low opinion of the professional abilities of chemists; but to suggest, as Dr. Diplock does, that a properly qualified chemist cannot be relied on to treat a case of infantine diarrhoea without committing manslaughter, is asking a little too much of public faith." It will be recollected that in the case referred to, calomel and lime water were given by the chemist, and chalk mixture by the physician. This week we report a very similar case, with this difference, that the chemist gave chalk mixture. This prescription was strongly condemned by the coroner and the jury. This indiscriminate condemnation places chemists and druggists in an awkward position. They are aware of the frightful loss of life annually amongst children due to bowel complaint, more than *twenty thousand* deaths of children being traceable to this cause alone. In

the treatment of the complaint heroic remedies are rarely resorted to by physicians, and chemists only follow their example in giving simple astringents when they are asked by poor people to give them the benefit of their experience. If only these isolated cases, which are brought before the coroner, are those amongst the thousands which may be laid to the charge of the chemist, there is no room for maligning.

* *

Shipments Her Majesty's Minister at Madrid has reported to Spain. that, under the existing Spanish Customs regulations, certificates of origin are required. A simple declaration of the shipper of goods to the effect that they are of British origin will, however, be deemed sufficient at the Spanish Custom-houses. This declaration is to be made before the chief officer of Customs at the port of shipment; and shippers are recommended to make it on the specification of goods in the following form, viz. :—

I,, do hereby declare that the goods mentioned herein are of British produce or manufacture.

....., Exporter.

Signed and declared in my presence this day of, 188..

.....
Chief Officer of Customs,
Port of

This officer will sign the document on the form prescribed by the Commissioners of Her Majesty's Customs. The certificate of origin must then be viséd by the Spanish Consul at the port of shipment, whose *visa* will be given free of charge.

* *

Work for Mr. W. L. Fisher has been giving another of his startling discourses to the British Dental Association. What he wants now is to have the mouth of every boy and girl who enters a middle-class school examined, at the expense of the State if necessary, or in some other way which will pauperise the parents if they are unable or do not care to pay the fees of the "curriculum-qualified dentist." Mr. Fisher's theory is that "every child's mouth ought to be examined on its entrance into school life, and its occasional application throughout, by a thoroughly competent curriculum-qualified dentist; no child to be allowed to commence its studies until every tooth stood an equal chance of existence with every other organ of the child's physical existence. This would necessitate the appointment of dental surgeons to all schools under the Educational and Home Office Departments of our country." Further, he would have instruction given to the children in the shape of occasional lectures by their dentists, on such subjects as "the keeping clean of the teeth," "the necessity for the use of hard foods," "the thorough salivation of food," "the detection of decay," "the advantages of preventive rather than reparative treatment," &c., and he would encourage the young idea by prizes. Poor children! Poorer dentists!

* *

A Long Giovanni Succi, the Italian who claims to have discovered an elixir which, as he alleges, enables him to live for long periods without food, is reported to have fasted lately for fourteen days under watch, and he is at present attempting a fast of thirty days and nights under surveillance of a committee of vigilance at Milan. Signor Succi is a traveller by profession, and in Africa he claims to have found the herbs from which he concocts this elixir, but he states that they are also to be found in Italy. In Africa, according to Signor Succi's statements, he made "important treaties with some native princes, and secured concessions—among others the island of Joannah, which he wished to cede to the Italian Government on his return." In order to complete this session, he wrote a number of letters to the King of Italy and to the members of the Italian Ministry, but as he could not, apparently, write anything at all without reverting to the virtues of his elixir, his communications were thought to emanate from a madman, and no notice was taken of them. At last, however, he has succeeded in attracting the attention of the medical faculty, and his alleged discovery is now being put to the test in the manner above mentioned. It is stated that the elixir upon which Succi claims to support life consists simply of an arsenious solution. It is well known that

arsenic possesses the property of producing in the stomach a warmth which temporarily allays the pangs resulting from the deprivation of nourishment. The chemist who has suggested this view of the question is said to purpose experimenting upon himself with an arsenious solution.

BANKRUPTCY REPORTS.

Re JOHN ANGUS.

At the High Court of Justice, Queen's Bench Division, on September 10, an application was made before Mr. Registrar Finlay Knight for the approval of resolutions passed by creditors for the acceptance of a composition of 2s. in the pound, payable within seven days from the date of such approval. The debtor, who failed about two months since, was a chemical broker, carrying on business at Ingram House, Feuchurch Street, under the style of John Angus & Co. The liabilities amounted to 74,531., and the assets were estimated at 10,7917. The Registrar, after some discussion, made an order for the approval of the resolutions.

FAILURE OF THE PATENTEE OF NYLONITE.

In the London Bankruptcy Court a receiving order has been made against the estate of Daniel Spill, whose liabilities amount to 9587., without any assets. According to the observations of the Official Receiver, the debtor states that he was the patentee and manufacturer of "Nylonite," and in 1877 sold his interest in the British rights to a company in London for 6,0007., but received only about 3,5007., retaining, however, his American patent rights. The debtor alleges that a "celluloid" company in America infringed his patent rights, and that litigation in the courts there has been pending between him and the company for nine years past in respect thereof. The consideration for the debts owing is stated to be "money lent," and legal and other services rendered him. He further states that in 1861 he intrusted certain shares in the British Nylonite Company to his nephews to realise, and with the proceeds thereof (1,6407.) to pay his liabilities in Great Britain; but he alleges the proceeds were misappropriated. He attributes his failure and deficiency to law costs and expenses incurred in litigation, and to loss by such alleged misappropriation. He has not kept any books of account. He was adjudged bankrupt in January, 1833. No statement of affairs was filed, and nothing was done; but the bankruptcy was closed in August, 1884, and the adjudication was annulled in March, 1886, on the debtor paying the petitioning creditor's debt and costs. The court has made an order for the summary administration of the estate.

NEW COMPANIES.

CONTINENTAL OXYGEN COMPANY (LIMITED).—Registered to acquire certain patent rights, and to manufacture and supply oxygen gas. Mr. E. Elias, 15 Great Winchester Street, Mr. W. Sharp, 9 Walbrook, and Mr. J. Sharp are amongst the first subscribers.

THE ORANGE WINE COMPANY (LIMITED).—Registered August 24, by Mr. J. J. Wood, 44 Lincoln's Inn Fields, W.C. The capital of the company is 10,0007., divided into 2,000 shares of 57. each, with power to increase. Object:—to enter into an agreement with Mr. Henry Charles Edwards, of Woodbridge, Suffolk, merchant, to carry on the businesses wholesale and retail, of manufacturers and dealers in British wines, cordials, and compounds; also of manufacturers and dealers in aerated waters and aerated wines, preserves, pickles, sauces, essences, and confectionery. The first subscribers are:—H. C. Edwards, merchant, Woodbridge, 1 share; S. S. Higham, merchant, Woodbridge, 1; J. Blyth, wine merchant, Portland Place, W., 1; T. C. Frye, merchant, 19 Colville Mansions, W., 1; J. E. Flatt, wine merchant, 13 High Street, Sheffield, 1; H. Brown, wine merchant, 18 Boar Lane, Leeds, 1; G. B. Francis, wholesale druggist, Vale House, Hertford, 1 share. There shall not be any directors of the company, but the business shall be managed by two general managers, viz., Henry Charles Edwards and S. S. Higham, the latter to hold office for life or until he shall resign; general meeting to determine remuneration.

Legal Reports.

INLAND REVENUE PROSECUTION.—THE MUTILATION OF PATENT MEDICINE STAMPS.

At the Central Criminal Court on Thursday, Edward John Wall and David Sidney Watson, chemists and druggists, carrying on business at 137, Queen's Crescent, Haverstock Hill, were indicted before the Recorder, Sir T. Chambers, for having in their possession "feloniously, knowingly, and without lawful excuse," certain Inland Revenue stamps which had been fraudulently mutilated. We have previously fully reported the preliminary proceedings of the case. It will be recollected the defendant Wall was the managing partner in the business carried on at Queen's Crescent, under the name of Denzil Thompson, from whom the business was purchased in February 1885. Previous to purchasing this business Wall was apprenticed in the year 1876 to Mr. Thomas Mee, of Highbury, London, with whom he stayed four years. After that he acted as assistant to Messrs. George Waugh & Co., chemists, Regent Street, where he stayed eighteen months. Then he became assistant to Mr. Wright, of Mildmay Park. On leaving Mr. Wright he took a chemist's business for himself at St. John's Wood, where he was also post-master. His next move was the purchase of the business of Mr. Denzil Thompson, in February 1885. The charge against Wall arose in this way. In July last Mr. Jonathan Link, an inspector of stamps at Somerset House, went to the shop and purchased patent medicines which were subject to stamp duties, amongst the articles purchased being a box of vegetable aperient pills, on which he found a stamp half of which had been cut off diagonally, and wound round the box in an ingenious way so as to conceal the mutilation. Another box purchased had the stamp affixed in a similar way, the object being to make one stamp do for two bottles or boxes, thereby defrauding the revenue. In consequence of this a warrant was obtained for the purpose of searching the defendant's premises, and on August 13 Police Inspector Dodd and Sergeant Ottway accompanied Mr. Link to the shop, where they found Wall serving behind the counter. On making a search they found in one drawer nineteen bottles of medicine (comforting syrup), two bottles of cough tincture, two boxes of liver pill, and two empty boxes, all of which had mutilated stamps upon them. Wall was thereupon taken to the police station and charged with the offence. There was an assistant in the shop at the time of the search, but Wall said he was alone responsible for the mutilation of the stamps, and the assistant was therefore not taken into custody. At the police station, however, Wall said that his partner, Watson, was also responsible. Wall was then taken before the magistrate at Marylebone Police Court, before whom the Inland Revenue instituted a prosecution for felony against Wall under 34 & 35 Vic. c. 93, sec. 13, sub-sec. 8, which provides that whoever "knowingly and without lawful excuse (the proof of which lies upon the accused) had in his possession any forged die or stamp or any stamp or part of stamp which had been fraudulently cut, torn, or otherwise removed from any material, or any stamp which had been fraudulently mutilated, or any stamped material whatever out of which any name, sum, date, or other matter had been fraudulently erased or otherwise removed, or apparently removed, would be guilty of felony, and upon being convicted of the offence might be sent to penal servitude for life, the minimum term being five years. There was, however, an alternative punishment provided for, which consisted of imprisonment for a term not exceeding three years. On the evidence given by Mr. Link and the police officers, Wall was committed for trial on the charge of felony. The other partner, Watson, was not at first proceeded against, but subsequently he was included in the indictment.

Mr. J. P. Grain now appeared for the defendants, and Mr. Besley for the Inland Revenue.

The defendants, who are both very young men, pleaded guilty; and Mr. Grain, addressing the Court in their behalf, submitted that the offence was really a very small affair, and he thought it somewhat hard that the Inland Revenue authorities should have elected to proceed under the more penal section of the Act when it was open to them to proceed for penalties. The defendant Wall stated

that since he purchased the business from Thompson only 18% worth of duty stamps had been purchased by himself and partner, who was not a chemist, and that the total value of the stamps mutilated since June last, when they first commenced the mutilation, was only about 3s. The police had nothing to say against the defendants, but on the contrary they stated that the shop was one of the best in the North of London. The learned counsel submitted that if the Inland Revenue had proceeded for penalties, all they could have recovered would have been 10%, and if the defendants had omitted to put stamps on the bottles they could only have been proceeded against for penalties. He therefore submitted that the infliction of a penalty would fully meet the justice of the case, and that to send the defendants down for a period of imprisonment would entirely ruin them.

Mr. Besley said that the offence was one which the Inland Revenue authorities had reason to believe was frequently committed throughout the country, and therefore the authorities were anxious that the matter should come before a judge, and that some punishment in the way of imprisonment should be inflicted so as to act as a warning to others.

The learned Recorder took time to consider the matter, and during the afternoon the defendants were again placed in the dock to hear the result. His Lordship said that, after consultation with Mr. Justice Wills, he had come to the conclusion that the Act of Parliament was intended to apply to much more serious matters than this, such as the mutilating or removing of stamps from deeds which would affect the right to property perhaps to a very large amount; but he did not believe that the legislature in passing the Act contemplated its being applied to the mutilation of three-halfpenny patent medicine stamps. Justice Wills agreed with him that the justice of the case did not require that the defendants should undergo any period of imprisonment if they agreed to pay the costs of prosecution. The decision of the Court therefore was, that they should pay into Court 20% towards the costs of the prosecution, and upon payment of this sum, or entering into their recognisances to do so, they would be discharged.

GOODALL, BACKHOUSE & Co. v. WHITELEY.

On Wednesday, September 8, before Mr. Justice Stirling, in the Chancery Division of the High Court of Justice, application was made in this case for an injunction to restrain the defendant from infringing the plaintiffs' registered trade-marks. Mr. John Cutler said the plaintiffs were the manufacturers of the well-known "Yorkshire Relish" sauce, and had registered two trade-marks, viz., the label, and the words "Yorkshire Relish." The defendant had infringed both these marks, having sold sauce not of the plaintiff's manufacture in bottles bearing labels which were a colourable imitation of the registered design of the plaintiffs. The defendant sent out his sauce in bottles which had formerly contained the plaintiffs' sauce, having impressed on them the words "Yorkshire Relish," and the labels were placed in the same position as those of the plaintiffs. The defendant not having put in a defence, the plaintiffs asked for an injunction restraining the infringement of their trade-mark by the defendant, and the sale of any sauce, not being of their manufacture, as "Yorkshire Relish" in bottles bearing labels being a colourable imitation of their registered design. They also asked for an account of profit, and for the costs of the action. His Lordship made the order as asked.

THIRD DAY is the name of a young drug clerk in Brooklyn who has secured temporary fame in his native town by damaging his eyes and face with a corrosive acid which he was bottling.

PATENT MEDICINES—A writer in a society paper questions whether the indiscriminate sale of patent medicines is an unmixt good. The Government stamp upon them is often a "mockery, a delusion, and a snare," for the contents of a bottle or a box, duly stamped, may be made up of deleterious drugs, or pernicious narcotics. In Penzance they "manage things better," so the writer says, for there the actual components of every patent medicine have to be named and registered, and thus patients or their friends know exactly the kind of "stuff" they are dealing with.

Genesis of the Elements.

ADDRESS TO THE CHEMICAL SECTION OF THE
BRITISH ASSOCIATION.

BY WILLIAM CROOKES, F.R.S., V.P.C.S.,
PRESIDENT OF THE SECTION.

INTRODUCTORY.

A GLANCE over the presidential addresses delivered before this section on former occasions will show that the occupiers of this chair have ranged over a fairly wide field. Some of my predecessors have given a general survey of the progress of chemical science during the past year; some, taking up a technological aspect of the subject, have discussed the bearings of chemistry upon our national industries; others, again, have passed in review the various institutions in this country for teaching chemistry; and in yet other cases the speaker has had the opportunity of bringing before the scientific world, for the first time, an account of some important original researches.

On this occasion I venture to ask your attention to a few thoughts on the very foundations of chemistry as a science—on the nature and the probable, or at least possible, origin of the so-called elements. If the views to which I have been led may at first glance appear heretical, I must remind you that in some respects they are shared more or less, as I shall subsequently show, by not a few of the most eminent authorities, and notably by one of my predecessors in this chair, Dr. J. H. Gladstone, F.R.S., to whose brilliant address, delivered in 1883, I must beg to refer you. Should it not sometimes strike us chemists of the present day that after all we are in a position unpleasantly akin to that of our fore-runners, the alchemists of the Middle Ages? These necromancers of a time long past did not, indeed, draw so sharp a line as do we between bodies simple and compound; yet their life-task was devoted to the formation of new combinations, and to the attempt to transmute bodies which we commonly consider as simple and ultimate—that is, the metals. In the department of synthesis they achieved very considerable successes; in the transmutation of metals their failure is a matter of history.

THE CHEMISTS OF TO-DAY.

But what are we of this so-called nineteenth century doing in our laboratories and our libraries? Too many of us are content to acquire simply what others have already observed and discovered, with an eye directed mainly to medals, certificates, diplomas, and other honours recognised as the fruits of "passing." Others are seeking to turn the determined facts of chemistry to useful purposes; whilst a third class, sometimes not easily distinguished from the second, are daily educating novel organic compounds, or are racking their ingenuity to prepare artificially some product which Nature has hitherto furnished us through the instrumentality of plants and animals. The practical importance of such investigations, and their bearing on the industrial arts and on the purposes and needs of daily life, have been signally manifested during the last half-century. Still a fourth class of inquirers, working at the very confines of our knowledge, find themselves, occasionally at least, face to face with a barrier which has hitherto proved impassable, but which must be overthrown, surmounted, or turned if chemical science is ever to develop into a definite, an organised unity. This barrier is nothing less than the chemical elements commonly so called, the bodies as yet undecomposed into anything simpler than themselves. There they extend before us, as stretched the wide Atlantic before the gaze of Columbus, mocking, taunting, and murmuring strange riddles, which no man yet has been able to solve.

THE ELEMENTS—A RIDDLE.

The first riddle, then, which we encounter in chemistry is, "What are the elements?" Of the attempts hitherto made to define or explain an element none satisfy the demands of the human intellect. The text-books tell us that an element is "a body which has not been decomposed;" that it is "a something to which we can add, but from which we can take

away nothing," or "a body which increases in weight with every chemical change." Such definitions are doubly unsatisfactory: they are provisional, and may cease to-morrow to be applicable in any given case. They take their stand, not on any attribute of the things to be defined, but on the limitations of human power; they are confessions of intellectual impotence. Just as to Columbus long philosophic meditation led him to the fixed belief of the existence of a yet untrodden world beyond that waste of Atlantic waters, so to our most keen-eyed chemists, physicists, and philosophers, a variety of phenomena suggest the conviction that the elements of ordinary assumption are not the ultimate boundary in this direction of the knowledge which man may hope to obtain. Well do I remember, soon after I had obtained evidence of the distinct nature of thallium, that Faraday said to me, "To discover a new element is a very fine thing, but if you could decompose an element and tell us what it is made of, that would be a discovery indeed worth making." And this was no new speculation of Faraday's, for in one of his early lectures he remarked, "At present we begin to feel impatient, and to wish for a new state of chemical elements. For a time the desire was to add to the metals; now we wish to diminish their number. . . . To decompose the metals, then to reform them, to change them from one to another, and to realise the once absurd notion of transmutation are the problems now given to the chemist for solution."

MORE PHILOSOPHIC OPINIONS.

Mr. Herbert Spencer, in his hypothesis of the constitution of matter, says, "All material substances are divisible into so-called elementary substances composed of molecular particles of the same nature as themselves; but these molecular particles are complicated structures consisting of congregations of truly elementary atoms, identical in nature and differing only in position, arrangement, motion, &c., and the molecules or chemical atoms are produced from the true or physical atoms by processes of evolution under conditions which chemistry has not yet been able to reproduce."

Mr. Norman Lockyer has shown, I think on good evidence, that in the heavenly bodies of the highest temperature, a large number of our reputed elements are dissociated, or, as it would perhaps be better to say, have never been formed. Mr. Lockyer holds that "the temperature of the sun and the electric arc is high enough to dissociate some of the so-called chemical elements, and give us a glimpse of the spectra of their bases;" and he likewise says that "a terrestrial element is an exceedingly complicated thing that is broken up into simpler things at the temperature of the sun, and some of these things exist in some sun-spots, while other constituents exist in others."

A GREAT AUTHORITY ON THE DISSOCIATION THEORY.

The late Sir Benjamin Brodie, in a lecture on Ideal Chemistry delivered before the Chemical Society in 1867, goes even further than this. He says:—"We may conceive that, in remote time or remote space, there did exist formerly, or possibly do exist now, certain simpler forms of matter than we find on the surface of our globe— α , χ , ξ , ν , and so on. . . . We may consider that in remote ages the temperature of matter was much higher than it is now, and that these other things existed then in the state of perfect gases—separate existences—uncombined. . . . We may then conceive that the temperature began to fall, and these things to combine with one another and to enter into new forms of existence, appropriate to the circumstances in which they were placed. . . . We may further consider that, as the temperature went on falling, certain forms of matter became more permanent and more stable, to the exclusion of other forms. . . . We may conceive of this process of the lowering of the temperature going on, so that these substances, when once formed, could never be decomposed—in fact, that the resolution of these bodies into their component elements could never occur again. You would then have something of our present systems of things. . . . Now this is not purely an imagination, for when we look upon the surface of our globe we have actual evidence of similar changes in Nature. . . . When we look at some of the facts which have been revealed to us by the extraordinary analyses which have been made of the matter of distant worlds and nebulae, by means of

the spectroscope, it does not seem incredible to me that there may even be evidence, some day, of the independent existence of such things as χ and ν ."

THE UNITY OF MATTER.

In his Burnett Lectures "On Light as a Means of Investigation," Professor Stokes, speaking of a line in the spectrum of the nebulae, says:—"It may possibly indicate some form of matter more elementary than any we know on earth. There seems no *a priori* improbability in such a supposition so great as to lead us at once to reject it. Chemists have long speculated on the so-called elements, or many of them, being merely very stable compounds of elements of a higher order, or even perhaps of a single kind of matter."

In 1868 Graham wrote of Sir W. Thomson's vortex-ring theory, as enlivening "matter into an individual existence and constituting it a distinct substance or element."

From these passages, which might easily be multiplied, it plainly appears that the notion—not necessarily of the decomposability, but at any rate of the complexity of our supposed elements—is, so to speak, in the air of science, waiting to take a further and more definite development. It is important to keep before men's minds the idea of the genesis of the elements; this gives some form to our conceptions, and accustoms the mind to look for some physical production of atoms. It is still more important, too, to keep in view the great probability that there exist in Nature laboratories where atoms are formed and laboratories where atoms cease to be. We are on the track and are not daunted, and fain would we enter the mysterious region which ignorance tickets "Unknown." It is for us to strive to unravel the secret composition even of the so-called elements—to undauntedly persevere—and "still bear up right onward."

ACCIDENTAL OR DETERMINATE?

If we adopt the easy-going assumption that the elements, whether self-existent or created, are absolutely and primordially distinct; that they existed as we now find them prior to the origin of stars and their attendant planets, constituting, in fact, the primal "fire-mist," we are little, if any, the wiser. We look at their number and at their distinctive properties, and we ask, Are all these points accidental or determinate? In other words, might there as well have been only 7, or 700, or 7,000 absolutely distinct elements as the 70 (in round numbers) which we now commonly recognise? The number of the elements does not, indeed, commend itself to our reason from any *a priori* or extraneous considerations. Might their properties have conceivably differed from those which we actually observe? Are they formed by a "fortuitous concatenation," or do they constitute together a definite whole, in which each has its proper part to play, and from which none could be extruded without leaving a recognisable deficiency? If their peculiarities were accidental it would scarcely be possible for the elements to display those mutual relations which we find brought into such prominent light and order in the periodic classification of Newlands, Mendeleeff, and Meyer. Has not the relation between the atomic weights of the three halogens, chlorine, bromine, and iodine, and their serially varying properties, physical and chemical, been worn nearly threadbare? And the same with the calcium and the sulphur groups? Surely the probability of such relations existing among some 70 bodies which had come into fortuitous existence would prove to be vanishingly small!

EVOLUTION OF THE ELEMENTS—A CONTRAST.

We ask whether these elements may not have been evolved from some few antecedent forms of matter—or possibly from only one such—just as it is now held that all the innumerable variations of plants and animals have been developed from fewer and earlier forms of organic life? As Dr. Gladstone well puts it, they "have been built up one from another, according to some general plan." This building up, or evolution, is above all things not fortuitous: the variation and development which we recognise in the universe run along certain fixed lines which have been preconceived and fore-ordained. To the careless and hasty eye design and evolution seem antagonistic; the more careful inquirer sees that evolution, steadily proceeding along an ascending scale of excellence, is the strongest argument in favour of a pro-

conceived plan. The array of the elements cannot fail to remind us of the general aspect of the organic world. In both cases we see certain groups well filled up, even crowded with forms having among themselves but little specific difference. On the other hand, in both, other forms stand widely isolated. Both display species that are common and species that are rare; both have groups widely distributed—it might be said cosmopolitan, and other groups of very restricted occurrence.

(To be continued.)

FRENCH PHARMACEUTICAL NEWS.

(From our Paris Correspondent.)

CHEVREUL has survived it. The next morning after the celebration he went to his business as usual, and last Monday attended the regular weekly meeting of the Academy of Sciences. He took no actual part in the debates, but chatted with his neighbours, and appeared as cheerful and smiling as if nothing had happened. The congratulatory address which the *doyen* received from the Academy of Sciences, Berlin, has been published. Necessarily it is very eulogistic, as the following extract shows:—"He who would form a complete idea of your so busily occupied life should follow the entire course of your creative activity, which has been directed to all departments of chemistry. He must follow all the innumerable detailed researches which have enabled you to determine the nature of various minerals and of a large number of salts, as well as the composition of many organic matters. He should study your chemico-physiological works by which you have made such great advances towards the knowledge of the most important secrets of the animal organism, as well as your labours on the most varied questions of public hygiene. He ought to follow the excursions which enable you to fix the laws of the contrasts among colours, and to class them systematically and scientifically. He ought to study your lectures on the chemical principles of dyeing. He should finally imagine himself at the period when misty ideas of the most false and fantastic kind threatened to surround and obscure the mind, and when, with the record of history in your hands, you dissipated the mists by making your countrymen recognise in the delusions of the past the errors of the present time. Having thus represented in all its extent the activity that you have shown throughout your long life, we hold that your name should be inscribed in one of the first places on the list of the great men who have carried the scientific glory of France to the extremities of the earth."

POISONING CASES.—Two accidents from eating mushrooms recently occurred, one in an eastern department and another at Boulogne, near Paris. In the latter instance, a whole family partook of mushrooms gathered in the Bois de Boulogne by the father, and were taken dangerously ill, especially an infant twenty-eight months old, but under prompt medical treatment all eventually recovered. Another poisoning case which ended fatally was due to a pharmacist's mistake. By the way, it may be remarked that deaths resulting from this cause have been of late exceedingly rare. The accident in question occurred at Saint Clar, Department of the Gers. A child two years old having been troubled with worms, the father went to a pharmacist of the town for two *santonin* powders. After the administration of the first packet the patient was taken with convulsions, somnolence, and other symptoms of opium poisoning, and died before night. Morphine had been dispensed for *santonin*.

NEW APPOINTMENTS.—In the military service several pharmacists have received commissions in the Territorial Army. Messrs. Viron and Sonnié-Moret have been appointed pharmacists-major of the second class; Schadelin and Godfrin pharmacists aid-major of the first class; and Abadie, Archambaud, Benoit, Bernier, and Richart, pharmacists aid-major of the second class. In the colleges M. Fleury, heretofore director of the Clermont School of Medicine and Pharmacy, becomes its honorary director, and M. Mouffier, a pharmacist of the first class, has been appointed for nine years director of the physical and chemical studies in the laboratory of the Rheims School of Medicine and Pharmacy.

In the Faculties M. Paul Bert, now resident-general in Tonkin, has been granted further leave of absence, and M. Dastre, a doctor of sciences, will for one year more occupy his chair of professor of physiology at the Paris Faculty of Sciences. Lastly, M. Chatin, jun., is to remain for the coming year in his chair as professor of anatomy at the same faculty.

FRENCH HOSPITAL STATISTICS.—From official data recently published the number of hospitals in France is 371; of these 21 are in the department of the Seine. There are besides 426 asylums (hospices) and 836 hospital-asylums, in all 1,643 establishments, in which 2,865 physicians and surgeons are employed, besides 10,851 religious or lay nurses, 3,105 clerks, and 11,850 female servants. The whole forms a respectable army of 28,651 persons.

The beds designed for the sick actually number 72,025; for aged, infirm, or incurable persons, 54,839; and for the assisted children, 16,636. On adding the number of beds occupied by the personnel, the grand total of 168,200 beds is attained.

During twelve months 422,468 persons were admitted, 366,278 of whom are reported as cured, and 42,687 as dead.

Assisted children numbered 81,286; being composed of 2,065 foundlings, 11,236 orphans, and 67,985 abandoned children. Besides these, 45,730 received assistance at the homes of their parents.

CHEMISTRY AND PHARMACY AT THE COMING UNIVERSAL EXHIBITION.—By ministerial decision chemical and pharmaceutical products will be admitted in the exhibition to be held in 1889 in Paris. They will be classified in Group V., 9th class, which is to comprehend the following:—(1) acids, alkalies, and salts of all sorts. (2) Products of chemical industries; waxes and fatty bodies; soaps and candles; resins, tars and derivatives thereof; essential oils and varnishes; pastes and blackings. (3) Indiarubber and guttapercha products; dyestuffs and pigments. (4) Products derived from the mineral substances used in the manufacture of illuminating gas. (5) Mineral waters, natural or artificial; drugs and raw products used in pharmacy; medicaments, simple or compound.

THE FIRST CHILIAN PHARMACOPOEIA.—One copy of this new work has just reached M. Carlos Middleton, a pharmacist who is here superintending the publication of this first Chilian codex. His co-labourer in preparing the volume was Dr. Adolfo Murrillo, of Santiago. The Faculty of Medicine and Pharmacy of the Chilian University having approved this draft of a Pharmacopœia, a Presidential decree, formally issued in 1882, gave it the final sanction, and now Chili is going to have a Pharmacopœia of its own. Although edited and revised here the book has been printed by F. A. Brockhaus, in Germany, and it must be confessed the volume is a very fair specimen of typographical art, such as becomes a national codex. Parisian printers have only their own extravagant notions to blame for having lost the credit and profit attending such a publication.

Personalities.

MR. F. W. PLAYFORD has purchased the business of Mr. Jesser, formerly belonging to G. P. Watson, 108 Lower King Street, Norwich.

MESSRS. DE CARLE & SON, St. Augustine's Parade, Norwich, have succeeded to the business of Mr. Dunger, St. Stephen's Street, which they intend to carry on as a branch establishment.

THE *Lancet* announces the following changes in foreign university appointments. Dr. Sell, who has hitherto given instruction in the chemistry of foods, has been appointed to the newly established professorship of alimentary chemistry in Berlin. Dr. Joseph Moeller, of the Vienna Forest Department, has been appointed to the professorship of pharmacology and pharmacognosy in Innsbruck. Dr. Richard Maly, of Graz, has been appointed to the professorship of chemistry in the German University, Prague. Dr. B. Edler von Jirus, of Agram, has been appointed professor of pharmacology and pharmacognosy in the Bohemia University, Prague.

Trade Notes.

MR. SQUIRE JOHN PITT, of 20 Mark Lane, E.C., announces that the partnership hitherto existing between himself and Mr. John Green having been dissolved, he has established himself at the above address as a drug broker.

MR. CHARLES SHARLAND, of the firm of Messrs. Sharland & Co., wholesale druggists, Auckland, N.Z., arrived in London on the 9th inst., and is temporarily located at 16 Sambrook Court, Basinghall Street, E.C. Mr. Sharland is to act as home buyer for his firm, and is open to advise gentlemen as to New Zealand trade. The firm which he represents is an old and well-established one. Recently they have greatly extended their warehouses and works in Auckland. The new buildings face to Lorne and Coburg Streets. One part is used for storage, but the greater part is for manufacturing purposes and for putting up specialities. Mr. Sharland informs us that there are openings for good assistants in the colony; there are plenty indifferent men about, and no more of these are wanted. Senior assistants in charge of a pharmacy receive about 5*l.* a week, juniors about 3*l.* The hours are short and the climate is good.

LORIMER & CO.'S SPECIALITIES.—Mr. Lorimer, of the firm of Messrs. Lorimer & Co., Hargrave Park Road, N., on his recent visit to the United States made arrangements for the manufacture there of the specialities of the firm. Laboratories and offices have been secured at 208 Broadway, corner of Fulton Street, New York. Mr. Rowe (late of Strickland & Rowe, Kensington) acts as business agent for the firm. The more important of the specialities which the firm propose to manufacture in New York are Bromo-caffeine, coca wine, witch hazel extract, and compound syrup of hypophosphites. These are popular preparations amongst medical men here at the present time, and the products of the firm are of uniform quality and very elegantly put up. We notice that the firm now do their own printing, and do it well; and offer to supply labels for their preparations with the buyer's name instead of the manufacturers', or without any name, as may be desired.

THE "CHEMIST" DISPENSING COUNTER.—Following their previous designs—the "Pharmaceutical," the "Prize," and the "Special"—Messrs. Bowling & Govier, of Gun Street, have produced an excellent new counter, which they term the "Chemist." This is a very handsome piece of shop-furniture, is solidly constructed of mahogany, and affords in the front much room for show purposes. The working part at the back contains amongst other useful arrangements a good poison cupboard, the necessity of which in the dispensing department cannot be too strongly enforced.

BIRLEY'S PREPARATIONS.—More than forty years ago Dr. Samuel Birley advocated the use of free phosphorus in the treatment of disease. He did not consider it the "cure-all," but by judicious combination of other medicaments with phosphorus as the basis, he pretty nearly exhausted the more active members of the materia medica. Messrs. Gordon, Murray & Co., of 17 Castle Street, Holborn, E.C., are carrying out this theory, and have placed on the market no fewer than twenty different kinds of syrups of phosphorus—plain, ironised, magnesian, hepatic, and so on—and are bringing them before the public in a forcible manner. All have their special uses, and have been for many years used in private practice. The plain syrup is an elegant preparation of free phosphorus in which the nauseous taste is fully disguised.

MAUBERT'S SOAP.—The maker of this soap has conceived the happy idea of sending out his goods in dozen and half-dozen lots, packed in attractive and handsome boxes, covered with cretonne, which serve for handkerchief or glove cases after they are emptied. There is no letterpress adhering to the boxes, so that ladies, however, fastidious will not object to give a box a place on the dressing-table. Maubert's soap is of excellent quality: it is hard, of uniform colour, lathers well, and has a very agreeable perfume. The Althæa soap is one of the best, and retails at a very moderate price, including the elegant package. The agency is at 6 Love Lane, Aldermanbury, E.C.

HYGIENIC GAS-STOVES.—The great objection to the universal adoption of gas-stoves for the purpose of heating

apartments is that the products of combustion are so malodorous and unhealthy that few can tolerate them. The "syphon" stove, which has been patented by Messrs. S. Clark & Co., Park Street Works, Islington, N., and which we have had the opportunity of examining, obviates these disadvantages by an ingenious arrangement whereby the sulphurous acid, water, and other bodies formed by the combustion of the gas are condensed in a chamber from which the heated air passes, by a separate tube into a syphon box situated over the flame, into the room at a high temperature, and in a remarkably pure condition. For heating pharmacies the stoves appear to be well suited, as they are of elegant appearance, show a cheerful flame, and may be adapted for vaporising perfumes.

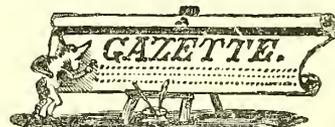
TRADE-MARKS APPLIED FOR.

THE *Trade Marks Journal* publishes the following notice:—"Any person who has good grounds of objection to the registration of any of the following marks may, within two months of the date of this journal, give notice in duplicate at the Patent Office, in the form 'J,' in the second schedule to the Trade Marks Rules, 1883, of opposition to such registration." All communications relating to patents, designs, or trade-marks to be addressed to H. Reader Lack, Esq., Comptroller-General of Patents, Designs, and Trade-marks, Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.

From the "*Trade Marks Journal*," September 15, 1886.

- "THE GREAT SKIN-CURE, CUTICURA," and other wording, on a square label; for medicine for human use, including salve or ointment (48,322); "Cuticura Resolvent," on diamond-shaped label (48,323); the same, with additional wording, on oblong label (48,324); both for medicine. By The Potter Drug and Chemical Company (successors to Weeks & Potter), Boston, Massachusetts, U.S.A.
- "PATERSON'S GOLDEN GRAIN"; for vinegar. By R. Paterson & Sons, 33 Osborne Street, Glasgow. 53,206.
- Royal Arms, with a ship within the central circle; for baking powder, egg powder, custard powder, and other similar dry goods. By J. M. Morris, Wokingham. 53,491.
- "PATENT SPARKLING CHAM," and horseshoe and bell, on diamond-shaped label; for a new aerated beverage. By M. Bell, 92 Herrington Street, Heudon, Sunderland. 53,652.
- "DRY SPARKLING COCA WINE," bell and griffin, and designation of firm; for a medicated wine. By S. L. Stacey & G. Stacey (trading as Corbyn, Stacey & Co.), 300 High Holborn. 54,017.
- "BROWN'S FURNITURE POLISH," and other wording on label, with crocodile swallowing a man; for a polish for furniture, &c. By R. Brown, Spring Hill, Birmingham. 54,196.
- "DIAMOND'S LINSEED," and other wording, with the word "Curative" in script on a diamond; for a medicinal preparation of linseed and other ingredients for a poultice. By J. Diamond, 1 Isabella Road, Hackney. 54,461.
- "DUTHOT'S PHIZINE," and other wording, on label; for an aerated and non-alcoholic drink. By W. Duthoit, 1 Preston Place, Roundhay Road, Leeds. 54,766.
- "CALVERT'S CARBOLIC ACID"; for carboric acid and preparations thereof. By F. C. Calvert & Co., Bradford, near Manchester. 54,798.
- "SANO," and autograph; for disinfectants. By A. L. Dussek, Verney Road, Canal Bridge, Old Kent Road, S.E. 54,814.
- "600 W.," for lubricating oils. By The Vacuum Oil Company, 1 Albany Liverpool. 54,895.
- "MIDGETS"; for pickles. By Crosse & Blackwell, Soho Square, W.C. 54,953.
- "PATENT SUPERSATURATOR," and autograph, on a geometric design; for an apparatus for the manufacture of aerated waters. By J. T. Leighton, 18 Montgomery Street, Edinburgh. 54,932.
- "THE CLIPPER"; for combs. By R. Hovenden & Sons, 32 Berners Street, W., and elsewhere. 55,142.
- "LAZARUS LOTION," and autograph; for medicated lotions. By Ruth M. Hands, Great Brook Street, Birmingham. 55,153.
- "NORMAL," a bull's head and a fish, within a circle; for fish oil. By The Normal Company, 52 Parliament Street, Westminster. 55,156.
- "IODATE SANITARY SALTS," on a heart-shaped design; for salts employed as deodorants, disinfectants, &c. By Richard Weaver, 24 High Holborn. 55,195.

- "BEST DOUBLE DISTILLED LAVENDER WATER," and other wording, on fancy label; for lavender water. By Gustav Boehm, 38 Moreland Street, City Road, E.C., and elsewhere. 55,208.
- "RING SPINDLE OIL," within and upon figures of ring and spindle; for lubricating oil. By The Dee Oil Company, Salting, Chester. 55,228.
- "TRIUMPH," over figure of a goddess; for dry soap, soap in powder, and other saponaceous articles. By Sam Dyson (trading as James Dyson & Co.), Atlas Works, Elland. 55,250.
- "LINCOLN"; for fused cake and other seed cakes. By Doughty, Son & Richardson, 201 High Street, Lincoln. 55,288.
- "CLEOPATRA'S NEEDLE," under representation of the same; for medicines for human use. By Sydney Huggett, Criterion Buildings, Upper Holloway. 55,348.
- "SUNLIGHT"; for chemical substances for agricultural and other purposes, and sanitary soap (55,356); the same for chemical substances used in pharmacy and medicated soap (55,357). "Sunlight, the Self-washer Tablet," on label; for similar purposes (55,360-31). By Lever Bros. Warrington.



PARTNERSHIPS DISSOLVED.

- CHINNEY & GRIFFITH, Almask Road, Lower Clapton, manufacturers of portable soda-water apparatus.
- GOLDSWORTHY, GOLDSWORTHY, & DAVEY, Gwenuap, Cornwall, manufacturers of ginger-beer and aerated waters.
- HANNAY BROS., Dudley, drysalts.
- MCQUEEN, R., & SON, Newcastle-on-Tyne, cutlers and surgical instrument makers.

RECEIVING ORDERS AND DATES OF PUBLIC EXAMINATION.

- BURTON, ALBERT GOODRIDGE, formerly of West Bromwich, Staffordshire now of Lichfield (late assistant analyst), aerated water manufacturer. Oct. 4. Oldbury.
- INGLEDEW, GEORGE, Woolwich, surgeon. Oct. 22. Greenwich.
- KING, APPLEBY, Deal, surgeon-lentist. Oct. 1. Canterbury.

FIRST MEETINGS.

- BURTON, ALBERT GOODRIDGE, formerly of West Bromwich, Staffordshire, now of Lichfield (late assistant analyst), aerated water manufacturer. Oct. 4. Court House, Oldbury.
- STRAWSON, VINCENT (also trading as Strawson & Co.), Liverpool, chemist, druggist, and soda water manufacturer. Sept. 21. Official Receiver's Offices, Liverpool.

ADJUDICATIONS.

- BURTON, ALBERT GOODRIDGE, formerly of West Bromwich, now of Lichfield (late assistant analyst), aerated water manufacturer.
- COLLIS, AMBROSE, Gillingham, Dorsetshire, aerated water manufacturer, &c.
- INGLEDEW, GEORGE, Woolwich, surgeon.

NOTICE OF DIVIDENDS.

- FLETCHER, WILLIAM, Pateley Bridge, Yorkshire, chemist and druggist. First and final div. of 2s. 2½d., Sept. 20. Official Receiver's Office, Middlesborough.
- MINER, ARTHUR, Romford and Hornelurch, mineral water manufacturer. First and final div. of 2s. 1d., Sept. 17. Official Receiver's Office, Romford.

ORDER MADE ON APPLICATION FOR DISCHARGE.

- EVANS, BARROW, Derby, formerly chemist and druggist, now in the employ of manufacturing chemists. Discharge suspended for six calendar months.

A SCIENTIFIC WINDFALL.—The French Academy of Sciences has just been informed of a bequest made by M. Leconte, a real estate owner of Rouen, in Normandy. The old gentleman has by will left to the Academy all his fortune, estimated to be fully half a million francs (20,000*l.*). Scientists will gain by it, for most likely the income will be spent in prizes to encourage scientific discoveries, and otherwise soften the hard lot of the poor savants.

Trade Report.

It should always be remembered that prices quoted in this section are as nearly as can be ascertained the lowest that are actually paid for bulk quantities. Considerable allowances have to be added in many cases before ordinary prices can be ascertained, and for many drugs it must be recollected the range of quality is very wide.

MINCING LANE, September 17.

OUR markets have been quiet throughout the week, and the drug sales on Thursday, with the exception of some momentary excitement occasioned by a firm of coffee-brokers buying up large quantities of rhubarb, mostly wormy, passed off extremely quietly.

MESSRS. J. BERGER SPENCE & Co. state that the market in chemicals is quiet. Orders given out are mostly of a retail character, and very little business is being transacted for forward delivery. It is not that buyers are expecting any sensible reduction in present values, as that they see no grounds for any material advance, and prefer, therefore, to cover current requirements only in the hope of securing a little advantage when next purchasing. There are a few exceptions to this, notably in *Bleaching Powder*. *Acetate of Lime* fully maintains the advance, but the future is so uncertain that few will venture either on buying or selling. *Carbolic Acid* is slow of sale and prices weak. There is a falling-off in the exports of *Alkali* of 13,000 tons for the eight months this year as compared with last. This is entirely due to the Continent of Europe, as 5,000 tons more have been sent to the United States during the same period. During the same time there has been a falling-off in the imports of *Nitrate of Soda* of nearly 20,000 tons, and yet prices show no signs of advancing. *Ammonia Products* are receiving more attention at late rates. Among minerals, *Phosphate of Lime* continues in moderate request at late rates.

ACID (CITRIC) firmer. There are sellers at 2s. 2d., and buyers at 2s. 1½d. per lb.

ALOES were well represented at the drug sales. A parcel of fair to good hard brown *Barbadoes* sold without reserve at from 75s. to 82s. 6d. per cwt. Of *Cape* only a few cases, inferior and drossy quality, were quitted. A large supply of *Curaçao* aloes sold pretty briskly. Dark liver realised 41s., paler but soft ditto 42s., and fair to good Capey-character 40s. to 46s. per cwt. There were several parcels in gourds, the better part of which realised 70s. to 77s. 6d. per cwt.

ANNATTO.—Some good bright seed and fair paste was shown, but remained unsold.

ANTIMONY remains neglected; Japanese star was bought in at a slightly lower price, regulus at 28l.

ARGOL.—Peruvian argol has now become a regular article of commerce on the Hamburg market, although the quantities in which it is imported are not as yet very considerable. In Sicily argols keep low in price with but little business passing.

BAEL FRUIT.—Twenty bags ordinary quarters sold at a low figure.

BALSAMS.—A parcel of 9 cases *Capivi* was sold at 1s. 2d. per lb., and some good bright Maranham was bought in at 1s. 6d. per lb. *Peru* is reported higher in America, but on this side the article, so far from showing any improvement, sells at a slightly cheaper price than before. *Tolu* has been sold at an advance in America, where manufacturers of chewing gum have taken large quantities out of the market. The American advance has made its influence felt here, and holders ask several pence more than a month ago. It should not be lost sight of that the low values which have for a long time prevailed have discouraged exporters at the other side to send over supplies.

CAMPHOR.—150 tubs Japan were offered in drug sale, but found no purchaser, and were bought in at 72s. per cwt. for lots of 10 tubs.

CANELLA ALBA.—Among the 47 packages shown at auction there was nothing of a quality calling for special comment. The article remains quiet.

CANNABIS INDICA.—Some fair but dusty greenish tops, sold at previous prices.

CANTHARIDES.—At the annual fair in Nishni-Novgorod which has just been held, only small parcels of flies changed hands, the price paid being 120 roubles per pood (=7s. per lb.). At Pultawa, the centre of the Russian trade, there is a stock of 1,000 poods (321 cwt.), for which owners ask extreme prices. The principal dealers, however, have agreed not to buy anything at the present rate, in order to force down the market.

CARDAMOMS are slightly lower. About 132 packages were placed in sale on Thursday, but the greater portion remained unsold. *Ceylon-Malabar*, medium sized, plump pods were quitted at 1s. 10d. to 2s. per lb.; country damaged ditto up to 1s. 7d., and seed at 1s. 6d. per lb.

CASCARILLA BARK.—Ordinary quality sells at unchanged rates.

CASSIA FISTULA.—Four cases pulp sold at 25s. per cwt., and a lot of very old and inferior pods at 5s. per cwt.

CAYENNE PEPPER.—Three cases from *Natal* bought in at 1s. 10d. per lb.

CINCHONA BARK.—The *Crown bark* from South America realises full prices, viz. 1s. 4d. to 1s. 8d. for fair, partly split grey quill; good grey mossy *Guayaquil* is worth 1s. 6d. per lb. Good *Loxa* bark is very scarce. Of yellow *Calisaya* there was a good supply catalogued, but no sales were made.

COCA LEAVES.—Recent arrivals of fair mixed *Huanoco* leaves are offering in quantity, but meet with little or no attention.

COLOMBO ROOT.—Among the large supplies brought forward only a few parcels show good bright root. These are held at 42s. 6d. per cwt.

CONCENTRATED LEMON AND BERGAMOT JUICES.—Under date of September 8, Mr. G. Ainis, of Messina, writes us:—A few pipes held by outsiders have found buyers at comparatively cheap prices, whilst holders of the stock ask big figures.

The lemon juice on forward shipment is in good demand at 26l. f.o.b., but sellers are anxious to see what course will be taken by the holders of the stock. Should these buy forward, the position might suddenly change in favour of sellers.

CUBEES.—There is still a good quantity in the hands of sellers, and 67 bags were catalogued for Thursday's sale, but no transactions took place. The berries were either very small, shrivelled, and dusty, or consisted of the dark and bold grey varieties mixed, and contained a good proportion of stalk. 14l. 5s. to 14l. 10s. was mentioned for these parcels.

CUSCUS ROOT.—We noticed a small parcel of exceptionally fine pale quality, tied in bundles about 10 inches in length. It was sold at 33s. per cwt.

ERGOT OF RYE.—Altogether 137 packages were offered for sale on Thursday, but there was no animation to buy and the whole was bought in, good Spanish of the new crop at 1s. 6d. per lb. In Hamburg Russian ergot has been further advanced in price by holders, who now ask 220 marks per 100 kilos (about 1s. per lb.), and it is thought that a further rise will take place shortly.

GALANGAL ROOT is neglected, and meets only lower offers.

GUINEA GRAINS.—Prices have advanced still further, and nothing could now be had under 19s. for quantities. This price was paid in auction on Thursday.

GUM AMMONIACUM.—Good small to bold palish drop sold at 35s. per cwt., and fair siftings at a very low price.

GUM ARABIC as a whole has been in good demand throughout the past week. Of *Australian*, very few odd lots were offered in auction, but, privately, sales of good fair gum have been made at 65s. per cwt. A few packages fine frosted *Cape* sold at 7l. 5s. In East India gums, *Aden* holders are very firm in their quotations. The better kinds *Amrad* brought extreme rates, viz., 7l. 5s. for fine, 94s. to 99s.

for good siftings, and 102s. 6d. for fine peas. For *Barbary kind*, privately, 97s. 6d. is required. *Ghatti* was about 3s. higher, good gum bringing 57s. per cwt. *Oomra* sold steadily; good pale at 92s. 6d. per cwt. *Senegal Gum*.—No spot business of any consequence reported; holders are very firm; galam, 6l. 2s. 6d.; bas du fleuve, 6l. 7s. 6d. We hear from Cairo that no arrivals had been received there from the interior until the end of August when a few lots, including a parcel Gehzirah, arrived and found eager purchasers at 188s. to 192s., f.o.b. Alexandria, for unsifted fourths to seconds. According to reliable reports nothing will arrive at Cairo during the current month. In Red Sea gums very few transactions have taken place, nevertheless holders ask very high figures, and it is impossible to purchase any really fair lot without taking along with it some very low dark and dirty gums. The prices of the middle to better qualities are 80s. to 92s. per cwt. f.o.b. Alexandria.

GUM BENJAMIN.—Fine bright first *Siam*, in medium to bold almonds, of which several cases were offered, was bought in at 26l. per cwt., lower offers being declined. A few cases good *Sumatra* seconds, alomdy centres, realised 11l. 2s. 6d., a steady price, and *Penang*, dark grey, partly false packed, 7l. 10s. per cwt.

DRAGON'S BLOOD quiet, and without sales.

GUM ELEMI neglected at previous values.

GAMBOGE is firm, and prices are well maintained. 11l. 10s. is asked for fair orange, but slightly run pipe, while dull pickings sold at 190s. per cwt.

GUM GUAIACUM.—Ordinary block, partly woody and grossy, sold at 5d. per lb. for three lots taken together.

GUM KINO.—38s. per cwt. was paid for 4 cases.

GUM MYRRH.—Only 22 packages of this drug were offered for sale, but consisted of the more ordinary qualities only, and nothing was sold.

GUM TRAGACANTH.—21 cases from Bagdad and Bussorah were shown, and a few sales made at the rate of 67s. per cwt. for dull brownish flake. Good, but partly small, whitish flake held at 130s. per cwt.

HEAVY CHEMICALS.—*Bleaching Powder* has made a further advance, and is now quoted at 8s. per cwt. ex warehouse. *Borax* again cheaper, at 25l. 10s. to 26l. for English, and 24l. 10s. to 25l. for foreign. *Cream of Tartar* and *Potash-bichromate* unchanged; but *Potash-chlorate* is perhaps a shade easier. *Soda-ash* and its principal derivatives maintain last week's quotations; but *Crystals* are decidedly firmer, being now quoted at 51s. 3d. ex ship London, or 45s. at the Tyne.

HONEY.—Several parcels have been sold, including whitish candied *New Zealand* at 33s., and brown liquid *Jamaica* at 20s. per cwt.

IPÉCACUANHA.—Only 15 serons were offered, but the greater number of these remained in the broker's hands; 3s. was paid for fair annulated, but mouldy root.

JALAP.—A few bales offered, but buyers were not disposed to pay the limits, and the whole was bought in.

KOLA PASTE.—The newest way in which to place kola on the market is in the shape of dark-brown coloured cakes, formed in chocolate moulds. The cakes weigh 1 oz. each, and are quoted at 3s. 6d. for large or 4s. for small lots. Altogether some 4 or 5 cwt. of this preparation (of the TC&Co brand) are offering.

LIME JUICE.—Jamaica juice, showing nearly 50 per cent. mineral matter and mucilage, is held at 1s. 4d. per gallon.

MUSK.—There was a fair supply of *Tonquin* pods, and a few caddies first pile medium to bold pods, provided with underskin, realised 67s. 6d. per oz.; good third pile fetched 39s., and ordinary ditto up to 19s. 6d. per oz. Among the lots offered were 2 tins "per land carriage," containing a most peculiar imitation of musk, almost devoid of flavour, in very small round pods, neatly wrapped in what looked like a chamois-leather skin, and half covered with 2-inch long hairs, pink at the base, whitish in the centre, and red-brown at the top. This "musk" was bought in at 5s. per oz., 3d. to 6d. being suggested by would-be buyers.

OILS (ESSENTIAL).—Three cases unworked *Anise* are understood to have been sold at 6s. for the whole parcel, thus marking a decline. A case fair yellow *Cinnamon* sold at 7d. per oz. *Cassia* in good demand, owners accepting a reduction of 1d. per lb., viz., 2s. 4d. for a lot of 5 cases. Part of the quantity quitted on Thursday was sold *without reserve*. Good pale *Eucalyptus Oil* is held at 3s. 3d. per lb. *Grass Oil* is held at 1d. per oz. 6½d. is the price asked for good pale *Nutmeg Oil*. *Citronella* quiet, at ¾d. per oz. for Native, and 1¾d. per oz. for Fisher's brand. The shipments from Ceylon from October 1, 1885, to August 12, 1886, were 6,004,294 oz., against 6,918,394 oz. in the corresponding period of 1884-85. There has been a well-maintained demand for *Otto* this week. During last week 800 oz. of the "Triton RCT" brand were sold at 25s. 6d. per oz. The outlook in Bulgaria is so black that holders of *Otto* have been induced to raise their prices and stand out for a further rise. Other oils are quiet, a few hundred lbs. of Algerian *Geranium* having been sold during the week at 21s. 7½d. per lb., principally the HV brand.

OILS (COD-LIVER).—The following is an extract from a despatch of H.M. Vice-Consul in the Lofoden Islands, dated July 12, 1886, on the cod fisheries in these islands:—"The Lofoden fishing has this year been the largest ever known on the inside of the islands. From January 14 to April 14 the catch of cod fish was 31 millions, and on the other side, including Westeraalen, about 10 millions more. The fish were in good condition and the price high, viz., about 16 kroner (17s. 9d.) per hundred. The price of the liver averaged 15 kroner (16s. 8d.) per hectolitre. The fishing in Finmarken has been very poor, viz., 8½ millions; and the immense catches in Lofoden and in the south of Norway caused the price obtainable in Finmarken to be very low, viz., about 12 kroner (13s. 4d.) per hundred, and the price of liver from 10 to 12 kroner (11s. 1d. to 13s. 4d.) per hectolitre. This result (low prices and small quantity) will have a serious effect upon the merchants in Finmarken, and I am afraid that many will become bankrupt. On the other hand, had the Finmarken fishing been large, it would have caused a tremendous loss to those who had purchased in the Lofodens at a high price. Cod liver oil for trade purpose ranges in price from 22l. to 16l. per tun."

PETROLEUM OIL.—Last week some forced sales of September oil were made as low as 5¾d., but these were exceptional transactions, the regular market price not having fallen below 5½d. Since then the position of the article has experienced an improvement, and the market closes firm at 5¾d. to 5½d. for spot stuff; 5½d. for October-December; 5¼d. for November-December, and 5¼d. for January-March. Water white is firm at 7¾d. to 8d., while a special parcel of superfine white, about 80° test, is offering at 7d. or a shade under. Of the Russian oil much that was not burnt up has been taken off the market, so that the business in this article is very small indeed, in fact it has not nearly reached the importance this season that many expected, the low range of prices accepted by the Americans more or less keeping the Russians out of the trade. *Russian* oil on the spot is quoted 5½d. to 5¼d. according to quality, November-December and January-March at 5¼d. On 1st inst. there was a total visible stock in Europe of 1,654,465 barrels, against 1,832,956 barrels at the corresponding period of the previous year, and 2,192,379 barrels in 1884. During the month of August there were added to the producing list in the Pennsylvania and New York oil fields 331 wells with an estimated daily production of 13,819 barrels. Messrs. W. H. Samuel & Co., of Liverpool, observe that prices are now lower than they ever have been, while the statistical position appears to point to a continuation of these low prices. The production of crude oil still increases, and stocks, after undergoing a gradual depletion for nearly two years, have during the past three months been considerably augmented, and now stand at 34½ millions of barrels. In consequence there has for a long time been a notable absence of any animation in the crude oil market, and prices of certificates have continuously hovered around the low figure, 61 cents per barrel. The refined markets of America too have been equally depressed, owing to the recognised necessity of keeping prices at a low point in competition with Russian oil, and undoubtedly the heavy production of crude oil, and the consequent reduced cost of same to the refiners, has

enabled them to cope with that competition in a manner that appears likely to result in the temporary collapse of the competition on a large scale of Russian oil upon English markets. This certainly seems to be the object that the American refiners are seeking to attain, and the next two months will decide whether they will succeed or not, and if they do, considerably higher prices may be looked forward to for the rest of the season.

QUASSIA.—Good chips are held at 6*l.* per ton.

QUICKSILVER.—The importer has again changed his price and now quotes 7*l.* per bottle, while second-hand holders hold at 6*l.* 19*s.*

RHUBARB.—The great majority of those present at the sales were taken by surprise when a firm of brokers, not connected with the drug trade, commenced bidding a full price for the first lot offered, and secured lot after lot in the first catalogue. The regular drug merchants soon became alive to what was going on, and secured a part of the rhubarb offering for themselves. Nearly the whole of the considerable supply was thus disposed of at irregular rates; the speculative outsiders paying mostly long prices, while the trade secured many cheap lots.

SACCHARINE.—We call attention to a notice referring to the manufacture of this product on page 400 of this week's issue.

SALTPETRE remains unchanged at 15*s.* 9*d.* per cwt. for spot *Bengal* ref. 5 lbs. per cwt. *Calcutta* advices, dated August 21, describe the market there as slightly easier, with sales for the fortnight of about 360 tons, mostly 5 per cent. washed for England. Supplies are arriving rather more freely, and unsold stock amounts to 8,000 to 9,000 bags.

SARSAPARILLA remains steady. Good grey bearded *Jamaica*, partly damaged, at 1*s.* 10*d.* per lb. Fair *Honduras* held at 1*s.* 6*d.* per lb.

ANISEED firm and in rather short supply. *Russian* is worth 30*s.*, and *Spanish* 50*s.* per cwt.

CARAWAYSEED.—The rise in prices, which was to be expected from the peculiar position of the respective markets and their exceptionally heavy engagements for early delivery, has taken place. However, only a very small portion of the quantities delivered have gone into consumption, and, judging from our own country, where arrivals have now been for weeks at the rate of 300-400 bales per day, we may safely assume that at the very least four months of the world's supply has by this been drained away from Holland. Present prices of 32*s.* to 33*s.* per cwt. must therefore be looked upon, so far, as only nominal.

CUMINSEED firm at 38*s.* per cwt. for *Malta*, and 24*s.* for *Morocco*.

FENNELSEED commands no attention, although very low in price.

FENUGREEK keeps rising steadily as the slender stocks gradually disappear. Price on the spot now 8*l.* to 8*l.* 10*s.* per ton, with no expectancy of further supplies below 9*l.* or 10*l.* per ton.

MUSTARD.—Fine *English* white is now more in the market; values keep firm; foreign seed neglected. For brown *Bombay* a good demand prevails here as well as in the States.

WORMSEED.—Twenty bags good greenish seeds elicited no reply, and were bought in at 26*s.* per cwt. The *Taschkend* *Santonin* works, which are the property of a wealthy native of the country, have recently reduced their price, and the manufacture of *santonin* has also recently been re-introduced into Germany, but yet higher prices are again looked for later on when the accumulated old stock of wormseed shall have been used up.

SENA sold with good competition and, on the whole, at slightly improved rates. Nearly 500 packages were offered in public sale on Thursday and almost entirely disposed of; good to fine, bold, greenish *Tinnevelly* leaves at 11*d.* per lb., fair, clear leaf at 5½*d.*, and dull, dark, mixed leaf as low as 2½*d.* per lb.

SULPHATE OF QUININE.—*Howards'* and *Pelletier's* brands are now respectively held at 2*s.* 6*d.* and 2*s.* 4*d.* per oz. in bottles. It is said that 7,000 oz. *German* quinine in bulk

have changed hands at 1*s.* 11½*d.* per oz. In public sale on Thursday, 400 oz. *Zimmer's* in bulk were bought in at 2*s.* per oz., 1*s.* 10*d.* being in vain solicited. On the same occasion 2,000 oz. *Whiffen's* make in bulk were sold at 1*s.* 10*d.* per oz.

TONQUIN BEANS.—The crop of this article, especially the *Angostura* variety, has been an abundant one, amounting, it is said, to 150 tons, which would suffice for two years' consumption, but the quality is stated to be below average. Nearly the whole has been consigned to New York, where all stocks are held by speculative operators, who seem firmly resolved to hold out for high prices. The British consul at Bolivar, in Venezuela, in his report for 1885, just published, states that last year no beans whatever were gathered in his district. The natives would not take the trouble to go to the Caura forests to collect the fruit on account of the low prices at which they are compelled to sell it to the agents of the parties who hold the exclusive privilege of collecting and exporting the vegetable products of the immense forests of the territory of the Caura. Some 14 tons of beans were exported from the State of Bolivar, but the whole of this belonged to the crop of 1884. Ten cases *Surinam* and *Pará* character of the old crop were bought in at prices ranging from 1*s.* 6*d.* to 2*s.* 6*d.* per lb.

VANILLA.—There was a good quantity offered for sale, but the bulk was of inferior quality. The following prices were realised:—7½ × 8 in. 19*s.*; to 20*s.*; 7 × 8 in. 16*s.*; 6½ × 7 in. 14*s.* 6*d.* to 15*s.* 6*d.*; 3½ × 6½ in. 13*s.* 6*d.*; 6 × 6½ in. 11*s.* to 13*s.*; 4½ × 7 in. 10*s.*; 5 × 6½ in. 9*s.* 6*d.* per lb. The island of Réunion exported in 1885 111,229 lbs. vanilla, the value of which was 54,834*l.* In 1884 the amount was 97,522 lbs., value 46,227*l.* We hear from Hamburg that the parcel of Tahiti vanilla imported there a few weeks ago has been partly disposed of.

WAX (BEES') is in good supply, and sells well at previous values.

LAST MONTH'S TRADE STATISTICS.

THE Board of Trade Returns for August show the following figures:—

	August, 1885	August, 1886
Imports.		
Total value	£28,805,576	£27,321,355
Exports.		
Total value	£18,494,633	£18,744,859
Foreign and colonial produce (partly estimated) ..	3,346,887	4,640,586

Below are the details affecting drugs and chemicals:—

	Aug., 1884	Aug., 1885	Aug., 1886
Imports.			
Chemical manufactures and products (unenumerated) value £	110,799	111,543	102,901
Alkali value £	6,331	8,497	9,637
.. .. . value £	7,219	7,427	7,687
Brimstone value £	72,071	74,694	20,987
.. .. . value £	15,625	20,316	7,429
Nitre (nitrate of soda) value £	12	95,262	85,600
.. .. . value £	6	53,155	43,705
.. (nitrate of potash) value £	9,154	31,651	27,568
.. .. . value £	8,237	24,033	26,088
Quicksilver value £	96,256	120,577	96,670
.. .. . value £	6,915	9,519	8,120
Drugs, unenumerated value £	78,818	61,224	42,889
Bark, Cinchona value £	14,772	7,963	11,009
.. .. . value £	122,308	56,307	57,213
Gum Arabic value £	5,326	3,388	1,796
.. .. . value £	15,749	12,582	7,600
Lac, seed, shell, stick, and dye value £	5,725	9,927	7,092
.. .. . value £	21,399	31,149	18,733
Spices—			
Cinnamon value £	237,384	125,507	119,339
.. .. . value £	11,894	4,887	5,137
Ginger value £	6,763	3,865	8,974
.. .. . value £	11,415	6,696	10,855
Pepper value £	1,985,231	3,351,396	6,310,023
.. .. . value £	57,816	100,389	196,988

Imports—continued.

	Aug., 1884	Aug., 1885	Aug., 1886
Dyes and tanning materials—			
Bark (for tanners' or dyers' use) .. cwt.	45,380	76,765	43,531
" " " " " value £	16,637	32,717	17,981
Aniline dyes	22,879	20,815	23,409
Alizarine	13,653	15,709	23,404
Other coal-tar dyes	10	400	553
Cochineal	583	1,007	555
" " " " " value £	3,306	6,107	3,474
Cutch and gambier	3,929	2,179	3,220
" " " " " value £	102,775	45,416	75,679
Indigo	2,758	1,756	700
" " " " " value £	48,954	28,557	12,356
Madder, madder root, garancine, and munjeet	2,882	1,837	1,901
" " " " " value £	4,112	2,745	2,430
Valonia	3,693	3,263	2,361
" " " " " value £	50,883	50,564	31,033
Oils—			
Cocoa-nut	10,420	10,469	11,793
" " " " " value £	16,941	15,828	15,985
Olive	1,161	2,180	1,814
" " " " " value £	47,338	85,525	63,292
Palm	10,955	97,241	71,431
" " " " " value £	182,685	154,077	155,569
Petroleum	6,038,800	4,922,962	4,827,462
" " " " " value £	182,685	154,077	155,569
Seed, of all kinds	1,456	1,016	1,416
" " " " " value £	44,108	28,696	53,302
Train, blubber, and sperm	2,616	2,519	2,330
" " " " " value £	82,971	68,626	53,302
Turpentine	48,960	35,829	23,260
" " " " " value £	58,079	46,274	30,974

Exports.

	Aug., 1884	Aug., 1885	Aug., 1886
British and Irish produce—			
Alkali	449,146	426,076	453,743
" " " " " value £	140,657	127,900	126,783
Bleaching materials	140,463	110,498	129,387
" " " " " value £	57,544	76,386	39,366
Drugs and medicinal preparations	68,008	74,062	61,130
Oil (seed)	976,900	1,251,100	943,400
" " " " " value £	84,045	117,534	85,055
Soap	38,661	28,411	35,544
" " " " " value £	42,461	34,879	35,127
Foreign and Colonial merchandise—			
Bark, Cinchona	7,767	8,425	7,960
" " " " " value £	46,631	43,521	36,580
Chemicals (unenumerated)	14,848	16,309	11,132
Cochineal	1,318	1,038	870
" " " " " value £	7,329	6,350	5,793
Cutch and gambier	1,466	925	1,077
" " " " " value £	36,182	18,252	27,740
Gum Arabic	2,514	4,984	4,383
" " " " " value £	8,453	17,123	18,005
Indigo	3,307	3,228	3,278
" " " " " value £	78,019	67,915	59,183
Lac, various kinds	5,044	4,455	4,569
" " " " " value £	19,218	13,905	10,545
Oils, cocoa-nut	17,695	9,919	8,628
" " " " " value £	27,893	15,178	12,614
" " " " "	183	168	216
" " " " "	9,411	8,515	9,115
" " " " "	29,741	21,340	24,983
" " " " "	59,939	23,820	25,863
" " " " "	71,375	59,876	35,509
" " " " "	3,119	3,648	1,356
Quicksilver	236,220	496,678	296,411
" " " " " value £	16,798	36,739	26,699
Salt-petre	1,101	7,064	1,763
" " " " " value £	997	5,929	1,454
Spices, cinnamon	69,557	118,025	72,683
" " " " " value £	3,670	4,520	2,838
" " " " "	1,985,320	1,947,659	2,239,706
" " " " "	61,849	66,009	67,634

SACCHARINE.—The patents for the manufacture of saccharine are in the hands of a German firm, who inform us that they are at present engaged in the erection of extensive works for saccharine manufacture. They hope to place their concern in working order at the end of the present year. In the meantime they regret being unable to execute any orders on saccharine, or to quote a price for it, their stock being completely exhausted.

Medical Cleanings.

NAPHTHALIN is recommended by Dr. Coriander, of Samarkand, as a valuable and economical remedy for worms, both tænia and ascarides. He gives children of from one to three years of age 2 or 3 grains twice a day. In the case of adults he gives from 20 to 80 grains a day in powder with sugar.—*Lancet*.

TURPENTINE AS AN ANTIDOTE TO PHOSPHORUS.

THE Paris correspondent of the *British Medical Journal* states that M. Ed. Rondot (Bordeaux), as the result of clinical observations and experiments, maintains the efficacy of turpentine in the treatment of poisoning by phosphorus, when taken either immediately or even some hours after the poison has been swallowed. The turpentine and phosphorus combine, and are eliminated without causing any other morbid phenomena than a local reaction on the alimentary and urinary organs. It is important to administer the turpentine at the outset, so as to neutralise the greatest quantity possible of the poison. Even if it be not completely neutralised, the oil of turpentine renders the symptoms milder, and favours recovery. Turpentine diminishes hæmorrhage and the nervous symptoms which follow poisoning by phosphorus.

PARALDEHYDE AS AN ANTIDOTE TO STRYCHNINE.

THE property of paraldehyde of greatly reducing the activity of the spinal cord as a reflex centre led Professor Bokai (*Pharm. Post*) to test paraldehyde as an antidote to strychnine poisoning. The results of his experiments made on rabbits, cats, and dogs were almost invariably favourable. The animals first received a non-fatal dose of paraldehyde, and then an absolutely lethal dose of strychnine was given. In no case did the strychnine produce death. If, however, doses of paraldehyde, which are themselves fatal, were given to animals, the largest doses of strychnine were not able to remove the poisonous symptoms of the paraldehyde or to delay the fatal processes. It would appear, therefore, that the antagonism between these two drugs is only one-sided. On the ground that the hypnotic action of paraldehyde is much more rapidly produced than the poisonous symptoms of strychnine, the *Therapeutic Gazette* suggests that paraldehyde, if given soon after the ingestion of a poisonous dose of strychnine, might serve to antagonise it.

CARBON BISULPHIDE IN NEURALGIA.

GUERDEN recommends, as far superior to menthol in neuralgia, the application, for three minutes, of the following solution:—

	Parts
Carbon bisulphide (rectified)	9
Oil of peppermint	1

In superficial neuralgias, whether facial, dental, or intercostal, and in superficial rheumatic pains, this application produces instantaneous relief, and not unfrequently a cure. In the deep neuralgias, as sciatica, it is necessary to project the solution upon the painful part by means of an atomizer. Dental neuralgia usually succumbs to this treatment applied to the corresponding cheek—a slight application to the gum, or the insertion into the carious tooth of a pledget of cotton moistened with the solution being occasionally advisable.

USES OF ICHTHYOL.

IN concluding his paper on the therapeutic value of ichthyol (to which we have previously referred), Dr. Schmidt states that the drug possesses pronounced styptic qualities, and is consequently useful in all hæmorrhages and wounds. The ichthyol plaster gave better results than any other medicinal plaster used in cuts and wounds. The sticking quality of the ichthyol plaster is so intense that it does not fall off the part even when being washed. He also states that in toothache ichthyol has in his hands sustained its character of a prompt relief-bringing remedy. A drop or two of a combination of ichthyol and chloroform (one to three), placed on a piece of cotton in the hollow of the tooth, or rubbed into the adjacent gum, is certain to bring almost instantaneous relief.



Memoranda for Correspondents.

Always send your proper name and address: we do not publish them unless you wish.

Write on one side of the paper only; write early; and devote a separate sheet of paper to each query if you ask more than one, or if you are writing about other matters at the same time.

If you send us newspapers please mark what you wish us to read.

Ask us anything of pharmaceutical interest: we shall do our best to reply.

Pharmacy in Canada.

SIR,—In the very interesting paper entitled "Pharmacy in Canada," which appeared in your columns lately, Mr. Mason makes several assertions which in justice to local pharmacists and others I trust you will allow me to correct.

The first error into which Mr. Mason falls in his remarks on the Province of Quebec is the statement that the late Mr. H. Sugden Evans was the compiler of the Dominion Adulteration Act. In point of fact, the Act in question was framed by the Hon. Senator Pagnet, and the skeleton draft submitted to Dr. Larocnye, the then Medical Health Officer of the city of Montreal, who made some improvements therein. When the Act became law Mr. Evans became Chief Analyst by appointment, and at his suggestion further amendments were made during the following session of the Dominion Parliament.

Further on Mr. Mason is again in error, when he states that Nathan Mercer, Dr. J. B. Edwards, and the late Mr. H. Sugden Evans were "the pioneers of Incorporated Pharmacy in the Province of Quebec." That the mention of Mr. Evans' name in this connection is a heavy strain on the facts of the case is evident from the fact that the Act of Incorporation was obtained some eight years before that gentleman became a resident of Canada; and even for some time after his arrival he kept himself aloof from all connection with the Association, owing to some misunderstanding having existed between him and the British Society prior to his departure from England. As for the other two gentlemen, they certainly did render valuable assistance in securing the Act of Incorporation, and especially Mr. Mercer. They, however, were only what might be called the Prussian column of our Waterloo.

The first meetings of pharmacists in Montreal of which we have any record date back as far as 1864, and at that time none of the gentlemen referred to by Mr. Mason had arrived in this country. At one of these meetings held in the office of Messrs. Lymans, Clare & Co., St. Paul Street, it was decided to form a chemists' association, the following officers and members of council being chosen:—John Kerry, President; Benj. Lyman, first Vice-President; H. Lamplough, second Vice-President; W. H. Clare, Treasurer; Henry R. Gray, Secretary; K. Campbell, Robt. Campbell, Ebenezer Muir, Alex. Manson, Richard Bolton, Thos. Crathern, and Richard Latham. These men were, strictly speaking, the pioneers of incorporated pharmacy in this province. They sacrificed time, energy, and money in the cause, fought several preliminary battles, defeated one or two aggressive Bills brought before the local legislature in the interests of the medical profession, and paved the way for the victory of 1870.

Had Mr. Mason consulted the preamble to the Act of incorporation, he would never have committed himself to the statement which I now criticise, as it reads:—

"Whereas it has been represented by the petition of Benjamin Lyman, Nathan Mereer, Henry R. Gray, James Goolden, Ebenezer Muir, John Kerry, John B. Edwards, Richard Bolton, Wm. H. Clare, Thos. Crathern, Alex. Manson, and Edmond Giroux, that they and divers others have been for

several years past associated together under the name of the Montreal Chemists' Association," &c., &c.

Mr. Mason is again unfortunate in his allusion to what he styles the "French Medical College." After he has been a few years longer in this province, he may doubtless find out that the College of Physicians and Surgeons (the body to which he alludes) is not a French institution pure and simple, but is the embodiment of the medical profession of the province; and that its Examining Board is equally composed of French and English members, and always has been.

Apologising for having trespassed on your space to such an extent,

I remain, your obedient servant,

W. AHERN.

Registrar Pharmaceutical Association

Montreal, August 27. of the Province of Quebec.

Museum of the Royal College of Physicians, Edinburgh.

SIR,—It is only on returning from my holiday that I find in your issue of August 7 a reference to the Martius Collection of Materia Medica in the Royal College of Physicians, Edinburgh, on which I should like to make a remark.

This collection certainly merits the title "magnificent" which you apply to it, and it is prized and "cared for," special cases having been provided for its reception in 1848, in which it still holds undisputed sway.

The collection, however, did not belong to Prof. Carl F. P. Martius, the celebrated Brazilian traveller, who has so largely illustrated the flora of that region, but to his brother, Dr. Theodore Martius.

My special reason for writing you, however, is mainly in reference to your closing remarks, in which you say, "It is a matter of regret, however, that the collection is so difficult of access, except to fellows of the college." I should be sorry, indeed, if such an idea of our exclusiveness as a college were to be entertained by the public, as it is placing us in a false position, for no one interested in materia medica who has asked for permission to inspect this collection has, so far as I am aware, ever been refused; and I beg now to state that, if anyone is desirous of seeing it he has only to apply to me, or send in his card to Mr. Browne, the officer of our college, to have his wish gratified.

THOMAS A. G. BALFOUR, M.D., F.R.C.P.E.,

Curator of Museum.

51 George Square, Edinburgh, Sept. 11, 1886.

The Photographic Trade.

SIR,—Having read the various letters, also the concluding remarks of "F. E. J.," on the subject of "Photography in its relation to a chemist's business," I should like, with your permission, to point out a few conclusions, deduced from the correspondence.

The evident opinion of the majority of the writers was that the photographic trade was not worth doing, on the ground of the profit on such not offering an equivalent for the amount of time it absorbed, to the possible detriment of the other portion of a chemist's business.

Having had a little experience of the trade during the past ten years, during which period I have seen the dry process introduced, and almost entirely supersede the wet process, which change has put the trade under an entirely new aspect, I would endeavour to gather from the various opinions expressed whether the supplying of photographic materials is a profitable adjunct or otherwise to a chemist's business, and to point out under what circumstances the trade may be worth attending to.

The science of photography has made rapid strides during the last few years. The old process, slow, and requiring a great amount of experience to be able to get a fair picture, has been displaced by a quicker, cleaner, and more easily acquired method, and this change has resulted in a vast increase in the numbers of those who pursue the art, either for profit or amusement.

Again, a larger demand and growing facilities for producing the chemicals and materials required, due to a more extended knowledge and severe competition, has reduced the price of such (both wholesale and retail), and hence the prices obtained by dealers ten years ago cannot be obtained now.

Chemists who lay themselves out for supplying photographic chemicals and materials must possess a good knowledge of the art, and the advantages, or otherwise, of the various methods of manipulation, and be in position to give hints and instruction to many of their clients, who invariably go to their dealer when any difficulty arises for which they cannot account. Again, photography often leads to other things, such as microscopy, &c., so that the photographic chemist must have a good general scientific knowledge, to enable him to succeed in his efforts of supplying the wants of a scientific age.

The chemist of to-day who debates in his own mind the wisdom of entering the field as a supplier of the wants of a photographic public may well be excused if he does so with considerable doubt as to the success of his venture, seeing that the profit is small, while it absorbs much of his time; though in a business, say with not much dispensing but general retail, with good-class customers, some of whom have a taste for dabbling in science, photography might be introduced with advantage, and would undoubtedly produce an improved business spirit, and give a more scientific status, a thing not to be overlooked in these days of increasing education; and again, the small profits might form a substantial portion of the business.

But should anyone, possessing a good dispensing business, with fair retail, thirst after large profit by the addition of this branch to his business, to such I say, let well alone, devoting your unemployed energy to the improvement of your more legitimate business, by looking to your own specialities, &c.

Apologising for thus trespassing on your valuable space.

I am, &c., HOPEFUL PHARMACIST.

DISPENSING NOTES.

[The opinion of practical readers is invited on subjects discussed under this heading.]

SIR,—I should like the opinion of your readers on the following:—

Quinia sulph.	..	..	..	..	gr. vi.
Magnes. sulph.	..	..	..	..	ʒss.
Acid hydrobromic	..	..	..	..	ʒiij.
Liq. strychnia	..	..	..	..	ʒss.
Syr. simp.	..	..	..	..	ʒiij.
Aq. ad	..	..	..	..	ʒvi.

Misce.

My method is to dissolve the quinine in an ounce of water with the acid, add liq. strych. and aqua to ʒivss., then ʒj. sol. mag. sulph. (1 in 2) and syr. simpl. On standing a white precipitate is formed (a magnesium compound I find). I may say the mixture has been dispensed in town without forming a deposit. Hence the query.

ASSISTANT. (209/15.)

September 8.

[As we go to press we have received a note from *Assistant*, in which he says:—"I have found that the deposit formed was phosphate of magnesia, due to phosphoric acid in the hydrobrom. acid, which latter had most likely been made by the pentabromide of phosphorus process."]

Blaud's Pills.

SIR,—In last week's Journal I omitted to state that when bicarbonate (such as bicarbonate of soda) is ordered, I find it necessary to add 1 grain of pulv. sacchar. to each pill in order to get sufficient moisture to develop the chemical action.

I prepared 1 dozen of T. G. A.'s pills on Saturday morning, following the plan stated last week, with the exception of not allowing them to stand, and with the addition of the sugar; no sign of the CO₂, to which you refer, presented itself.

Remarks last week are applicable to pills made with carbonate of potash.

St. Leonard's-on-Sea.

J. M. THOM.

SIR,—Would you please let me know through your valuable paper the best way to prepare the following recipe for pills, and oblige,

Yours respectfully,

A. D. (212/17.)

Ferri sulph.	..	..	..	..	grs. ij.
Potas. bicarb.	..	..	..	..	grs. ij.
Confect. rosarum	..	..	..	..	ʒs.

ʒt. pil. tales cl.

[We may repeat that the use of an alkaline bicarbonate gives an unsatisfactory result. Mr. Thom has been good enough to send us a sample of pills made by T. G. A.'s formula as above stated. They are full-sized 5-grain pills, the large size being due to unexpelled carbonic acid gas, as may be proved by working a pill between the finger and thumb for a minute and then comparing it with one of the original pills. It becomes much smaller. A. D. should use sulphate of iron 2 grains, subcarbonate of potash 1½ grain, sugar 1 grain, tragacanth powder ¼ grain for each pill, using a drop or two of water to start the massing.]

Salicylate Mixture, &c.

SIR,—Will you please inform me through the columns of THE CHEMIST AND DRUGGIST the cause of the colouration in the following mixture:

Pot. bicarb.	..	..	..	..	ʒij.
Sodæ salicyl.	..	..	..	..	ʒiss.
Vin. colchicil	..	..	..	..	ʒiv.
Aquæ ad	..	..	..	..	ʒviii.

It assumed a colour almost like tr. card. co. after standing forty-eight hours. It could not be due to a trace of iron, as it was gradually developed, and I believe Dr. Thresh, Buxton, has a printed slip that the colour will gradually come. Do you think there would be any deterioration when this colour is developed?

I should also like to ask you if you think it necessary to put a "shake the bottle" on a mixture containing pot. bicarb. and acid. hydrocy. dil., as it is done at some establishments.

Yours truly,

DISPENSER. (211/27.)

[It is a matter of common observation that aqueous solutions of alkaline salicylates become of a reddish-brown colour on exposure to light. We do not recollect to have seen the record of any investigation into the matter, but it is known that the oxidation products of salicylic acid are accompanied by coloured bodies. The therapeutic effect is not materially altered by the change.

Yes; use a "shake the bottle" label. It is some time before the acid enters into combination; indeed, it is questionable if it does so wholly.]

Gallic Acid in Mixture.

SIR,—How should the following prescription be dispensed so as to make it perfectly miscible and presentable:—

Acid. gallic.	..	..	..	..	ʒv.
Acid. sulph. dil.	..	..	..	..	ʒj.
Glycerini	..	..	..	..	ʒiij.
Aquæ ad	..	..	..	..	ʒviiij.

Yours truly,

PERPLEXED. (212/19.)

[Rub the gallic acid to a fine powder in a mortar, add the water and the remainder of the ingredients. No attempt should be made to dissolve the acid by the aid of heat, as it will crystallise out on cooling, and this is objectionable.]

Concentrated Mixture. (201/15, page 288.)

SIR,—In my opinion the dose should have been tablespoonful, not teaspoonful—a mistake by the physician who wrote it. If the prescription had come into my hands I should have ordered tablespoonful and charged 1s. 3d. for it. There is nothing in it but what any person from fifteen years could take it. I have made scores such like.

Yours,

H. S. V.

Bradford, Sept. 9.

SIR,—“Heder” is generally very practical, but in his reply to my former letter he indicates a want of practical knowledge. If two men show an equal amount of knowledge and cleverness in their business, one of whom enters into trade in London, in a locality which brings him a great number of prescriptions daily, whilst the other commences in the country, where prescriptions are few and far between, why should the latter charge any less if he uses the best quality of drugs and chemicals? My experience does not support “Heder’s” reasons; on the contrary, if I charge any less there seems to be a doubt whether the medicine has been correctly prepared, and the remark is often made, “Have you made it with the best drugs? I have generally paid so much at such a place,” this remark being made when there is no mark on the prescription to indicate how much it was charged in the first instance. But whenever a price has been attached which may be considered *bonâ fide*, and it has been asked again, no objection has been made.

Even assuming that the provincial chemist was making as many medicines from prescriptions daily as the London houses, if he possesses the qualification to compound it correctly, turns it out neatly and with all the recent improvements, I hold he is clearly entitled to the full charge, quite as much as the provincial physician or surgeon, whose fees are the same as the medical men in London.

Allow me to thank Mr. Wilkinson for the information he gave me.

Yours respectfully,
OBSERVER. (212/40.)

Alteration of Prescriptions.

SIR,—No doubt the method suggested by C. H. E. would be a more compatible way of prescribing arsenious acid in combination with liq. hydrarg. perchlor.; but in case the doctor cannot be consulted, and the dose being correct, the prescription should be dispensed as it stands, giving instructions to shake the bottle before each dose is taken. Substitutions should never be made, and as there are sixteen doses in the mixture there is not, with so fine a precipitate, the merest chance of the last spoonful containing an overdose.

The doctor may be well aware of the incompatibility, the precipitate being redissolved upon entering the stomach.

I have frequently dispensed the same combination as it stands, and it is unfair to others dispensing the same one if a substitution be made.

F. E. EARL.

Dublin, September 12.

Distilled Water.

SIR,—Seeing that the B.P. of 1885 recommends distilled water to be used in dispensing, a much larger quantity of this will now be used than formerly. As we would wish to carry out the directions of the authority in the matter we would feel much obliged if you would advise a plan of keeping it from becoming foul. Every person can scarcely afford to erect stills to produce it, and that which can be purchased can be kept only a very short time.

Yours truly,

PERFECT PURITY. (209/21.)

[The distilled water very frequently supplied by wholesale houses is simply the condensed vapour from the steam-heating pipes or steam boilers; consequently it generally contains ammonia. Hence the foulness that “Perfect Purity” complains of. The only plan we can suggest is to get a month’s supply at a time, and after boiling it divide into small bottles, which should be as full as possible and well corked. But it should be noted that the B.P. does not authorise such a distilled water to be used. Perfectly pure distilled water does not become foul.]

A Powerful Draught.

SIR,—I think I should have persuaded the customer that a 6-oz. mixture was intended, and should have assured him that I considered an omission had been made in the prescription. Mr. Hinde does not tell us whether the prescription was signed, or if it was a copy only.

HEDER. (211/66.)

Alteration of Prescriptions.

SIR,—I should have felt justified in using the acid solution of arsenic, but I should also have put in the amount of tr. lavand. co. which the Fowler’s solution contained.

HEDER. (211/66.)

207/60. *J. Smith.*—Liquor Pepsin:—

Pepsin porci	5iss.
Acid. hydrochlor. dil.	5ij.
Glycerini	3ij.
Aquæ chloroformi ad	3xiij.

Digest for four days with frequent shaking, and filter. If the liquid be shaken with a few drachms of well-washed kaolin before filtration it will filter more easily.

209/37. *Pepsin Porci.*—Glycer Acid. Pepsin.—Use double the above quantities of pepsin, acid and glycerine.

LEGAL POINTS.

“Proprietary Rights in Simple Drugs.”

SIR,—With reference to the correspondence on above question in your last issue, kindly inform me, as an Irish chemist, whether “Benger’s Liquor Pepticus,” “Murray’s Fluid Magnesia,” and similar preparations of simple drugs are exempt from stamp duty in England,

And oblige, yours faithfully,

AN IRISH CHEMIST.

[Murray’s Fluid Magnesia is a solution of a simple drug, viz., bicarbonate of magnesia, and is on that account exempt. Benger’s “Liquor Pepticus” is sold unstamped.]

INCOMPETENT APPRENTICES.

The following case has been put to us by *C. J.* (29/37):—

Supposing we take an apprentice for 4½ years at 80% premium, payable at the execution of indenture. Two years afterwards the boy proves unsuited to the trade, fails three times to pass the Preliminary, &c., and, showing little promise of doing well as chemist, it is thought desirable, in the interest of the boy and his parents, that he be released to give him a chance of learning some other trade where less study and attention are required. Do you consider any portion of the premium ought to be refunded, and if so how much?

We need scarcely add that we have given the boy every opportunity, and he has no complaint against us. He simply *has not the capacity.*

Again, the first two years an apprentice does not earn his salt, and is a positive nuisance. The profit or return to the master comes in the latter half of the time, when he becomes as useful as an assistant. In the present instance we have had all the drudgery, and he will leave just when he should repay us for trouble; and we shall have to engage an assistant to fill the place he ought to be able to take.

[The information given is insufficient to enable us to give an answer. If parents and master agree that the indentures had better be cancelled, this can be done on any terms mutually decided upon; but in that case we should consider a part of the premium—say 25 or 30 per cent.—ought in fairness to be returned. True the master loses the best part of the youth’s services, but, on the other hand, the parents lose entirely what they expected to get from the bargain; and it must be remembered that both parties entered on the contract with their eyes open, and are expected to fulfil it for better or worse. If the master himself refuses to continue the duties he has undertaken, he may be sued for the full amount of the premium he had received; and if the apprentice should refuse to continue “faithful service” (if, as is usual, that was stipulated for), he, too, renders his parents liable to damages.]

208/62. *G. B.*—We are not aware whether the design is registered as a trade-mark or not, but you can ascertain by application to the Comptroller, Trade-Mark Office, Southampton Buildings, Chancery Lane, E.C. Send thirteen 1*l.* stamps for the search and reply.

208/56. *Nemesis*.—It is generally supposed that the Stores do not pay income-tax, but we are informed that they do, and that it is deducted from the annual profits before division amongst the members. But as they work in the direction of small profits, it is obvious that the amount of tax paid is not commensurate with the amount of trade done. You can ascertain whether they are registered as limited liability companies by application at Somerset House, Inland Revenue Department.

W. W. (Paisley) asks us if it is legal for an unqualified man to have a share in a drug shop along with a registered chemist, with the name of the latter above the door, not as sole proprietor, but as manager.

[If it can be proved that an unqualified person shares the profits derived from the sale of poisons by a firm of which he is a partner, that firm not being a limited liability company, he is liable to prosecution for infringement of the Pharmacy Act, 1868.]

Bogus Titles.

SIR,—It would appear from the enclosed label from one of the "not chemists" that that growing class of individuals are not to be outdone in the use of mystic letters and qualifications. Perhaps some of your readers, and especially the A.P.S.'s and M.P.S.'s by examination, can throw some light as to their meaning.

Yours truly,
DEVONIENSIS.

September 9.

[The label sent is for "Protoan Justifolium," the new remedy, which is sold at 2s. 6d. and 4s. 6d. per bottle, and is prepared only by G. H. T., "F.M.M.B. (by examination)."] Perhaps the letters mean Free-Mason and Medical Botanist; indeed, they may mean anything.]

209/34. *Creta*.—Face Powder:—

French chalk or talc	16
Bismuth subnitrate	1
Zinc oxide	1

Mix.

All in very fine powder. If to be coloured, use carmine, and rub it up intimately with the bismuth before adding the other ingredients. Perfume should be treated in the same way.

209/44. *C. H. W.* would be glad to know the ingredients used in hand-grenade fire-extinguishers. [Crude chloride of calcium, 20; common salt, 5; and water, 75 parts.]

209/44. *E. M. W.* would be glad to know if ginger root loses flavour by being kept in stock in an ordinary dry warehouse for a twelvemonth or more. [Certainly; it contains a volatile oil and other bodies, whose characters change by exposure.]

209/42. *Perpleped*.—Blackboard Paint:—

Shellac	4 oz.
Ivory black	2 "
Emery (in fine powder)	1 "
Ultramarine blue	1 "
Methylated spirit	1 quart

Mix the whole, and agitate occasionally until the shellac is dissolved.

210/10. *W. H. W.*—Syrups for Seltzogenes:—

SYRUP OF LEMON.

Oil of lemon	20 minims
Citric acid	1 drachm
Rectified spirit	4 drachms
Sugar	12 oz.
Water	q.s.

Dissolve the oil in the spirit, add a drachm of French chalk

and 1 oz. of water, and allow to stand a day or two, shaking occasionally; then filter, and add to a syrup made of the sugar, citric acid, and 7 oz. of water.

Instead of the oil of lemon and spirit, 1 oz. of tincture of fresh lemon-peel may be used.

SYRUP OF GINGER.

Soluble essence of ginger (C. & D. DIARY,	
1884)	½ oz.
Tincture of fresh lemon peel	3ij.
Syrup	1 pint

May be coloured with browning.

Other flavours—such as pineapple, strawberry, &c.—may be made by mixing from 2 to 3 drachms of the essences to a pint of syrup, and colouring with cochineal or artificial orange. Fruit essences are advertised by several firms in this Journal.

209/38. *Lupulus*.—The secret in Hop Drying is to carry out the operation as quickly as possible, and this is generally done in specially constructed kilns. What your garden produces should be spread over the floor of some apartment which is moderately warm, and through which a current of air passes. Turn them over occasionally.

209/25. *C. M. H.*—Glycerine Jelly.—Soak an ounce of gelatine in 20 oz. of water over night, and in the morning add 20 oz. of glycerine, and heat on a water-bath until the gelatine is dissolved. Saffron or cochineal may be used to colour, and the addition of a small percentage of boracic acid is of advantage. Flavour with any essential oil. Use the best quality of gelatine. Isinglass gives a clearer jelly.

210/26. *S.*—Blue-black Ink.—We have some of this which was coloured with indigo carmine and has been nearly a year in use. It is still a bright blue, nor does it fade to pale green on exposure. Perhaps mucilage has prevented our ink from fading. Try a few drachms of mucilage to each pint of ink. Gum arabic does prevent chemical change in some cases.

Information Wanted.

SIR,—A thought struck me the other day, so I now send it on to you. Sir, as you have so many and varied contributions in the correspondence columns it would be a good idea for some of them to state their experience how they succeeded in pushing a patent medicine, and which way paid the best—handbills, circulars, or advertising in papers or in pamphlets.

Yours,
W. H. DEAN.

Huddersfield, Sept. 8.

Bottles of Accurate Measure.

SIR,—Through the medium of your valuable Journal I shall be glad to hear how my brother chemists fare with their dispensing bottles. It seems to me that, unless a high price be paid, one cannot get bottles of accurate measure. My experience of late, I fear, has added to my transgressions. A maker sent me a lot of 4-oz. lettered flats at 7s. per gross net, these held only 3½ oz.; another maker sent ¾-oz. flat essence bottles holding short measure, whilst a sundriesman sent 20-oz. blue poison bottles at 30s. per gross, holding only 18 oz., and another sent 2-oz. white flint bottles at 5s. 10d. per gross, holding 2¼ oz. These are a few of the inaccuracies I have lately met. It is unnecessary to add that none of these bottles could be used for dispensing purposes.

Yours, &c.
September 13. PRECISION. (211/73.)

211/74. *Faeta non Verba*.—A recipe for rosemary hair-wash, clear and strong. One containing soap preferred.

211/73. *Sub Umbrâ Floresco* wishes to know makers of indiarubber corks, or cords suitable for cutting into corks.

211/71. *Eblava* wishes to buy metal or wood top corks direct from manufacturers in 50-gross quantities.

RESPIRATORS.

These Articles bear a good profit and will pay to push. We have 27 patterns. The neatest and BEST of any in the market. We are actual Makers, and can produce any special kind in any colour at very short notice.

Retail Prices	1/	1/6	2/	2/6	3/	3/6	4/	5/	6/	7/6	10/6
Wholesale, per doz. ...	8/	12/	16/	18/	21/	24/	28/	30/	36/	48/	72/

Counter Cases containing assortments of the leading Patterns, as follows:—

No. 1 CASE.				No. 2 CASE.			
Two each of Nos. 1, 2, 3, 4.				Six each of Nos. 1, 2, 3, 4.			
One " " 5, 8, 10, 12, 14, 15, 17, 18, 20, 21, 22.				Two " " 5, 6, 8, 10, 12, 17, 18, 21, 22.			
Producing retail			£4 5 6	One " " 7, 9, 11, 13, 14, 15, 16, 20, 23, 25.			£10 18 6
Cost		£2 6 8		Producing retail			
Less 10 per cent.		0 4 8		Cost		£5 18 0	
			2 2 0	Less 10 per cent.		0 11 10	
							5 6 4
Showing a PROFIT of			£2 3 6	Showing a PROFIT of			£5 12 2

With orders amounting to £2 net we will send a Mahogany Glass-top Counter Case, with hinged lid, FREE OF CHARGE; and with orders amounting to £5 net a handsome Mahogany Counter Case (size 22x12x4), with sloping top, hinged back, and sliding tray.

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REDUCTION IN PRICES OF QUININE PILLS.

Owing to the decline in Quinine, we have reduced the list price of our **SULPHATE** and **BI-SULPHATE** of Quinine Pills to the schedule below :

	DOZ. BOTTLES					DOZ. BOTTLES			
	containing 25 PILLS		containing 100 PILLS			containing 25 PILLS		containing 100 PILLS	
	s.	d.	s.	d.		s.	d.	s.	d.
Quinine, Bi-Sulphate 1/4 gr.	5	0	16	0	Quinine, Sulphate 1/4 gr.	5	0	16	0
" " 1/2 gr.	5	0	16	0	" " 1/2 gr.	5	0	16	0
" " 1 gr.	5	0	16	0	" " 1 gr.	5	6	18	0
" " 2 gr.	7	6	26	0	" " 2 gr.	8	0	28	0
" " 3 gr.	10	6	38	0	" " 3 gr.	11	0	40	0
" " 4 gr.	13	0	48	0	" " 4 gr.	14	0	52	0
" " 5 gr.	16	0	60	0	" " 5 gr.	17	0	64	0

"McK. & R." PILLS. Manganese Bin-Oxide, 2 grs.

It appears to be an obstinate chemical fact, that permanganate of potassium, on account of the rapidity with which it is decomposed by organic matters, cannot possibly act *as such* beyond the stomach.

In the opinion of recognised authorities (mentioned by Dr. C. E. Billington, before the Section on *Materia Medica* and Therapeutics of the New York Academy of Medicine, Feb. 17th, 1886), the manganese of the permanganate separates in the stomach in the form of the hydrated manganese di-oxide.

It follows that for all Therapeutical purposes outside of the stomach itself the internal administration of the permanganate of potassium is simply one mode of the administration of bin-oxide of manganese.

Dr. T. Gaillard Thomas writes:—"Feb. 9th, 1886. The preparation I now employ is the McK. and R. Pill of the bin-oxide of manganese. I give two grains three times a day throughout the month and during the period."

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Absolutely pure Proto-Iodide of Mercury should be a bright yellow impalpable powder, entirely free from globules of mercury or particles of bin-iodide.

The title "Viride" should be discarded, and "Flavum" substituted as a correct description of the chemically pure product of precipitation found in the "McK. and R." Pills containing 1-8 and 1-4 grain. An examination will show the importance of specifying "McK. and R." Pills in preference to any other.

"The quality of the masses in the 'McK. and R.' capsuled pills, as exhibited through a lens which magnified the interior of the pills (containing mineral salts) twenty diameters, gave ocular demonstration of careful laboratory work."—*The British Medical Journal*, Sept. 4th, 1886.

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Æthers, pure & methylated.	Citric Acid & Citrates.
Antimony preparations.	Corrosive Sublimate.
Benzoic Acid & Benzoates.	Iodides of the Alkalies.
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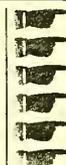
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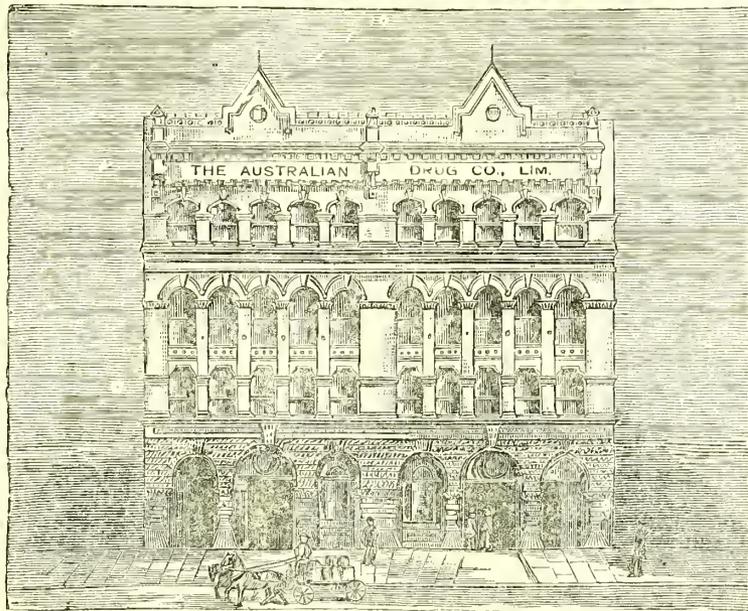
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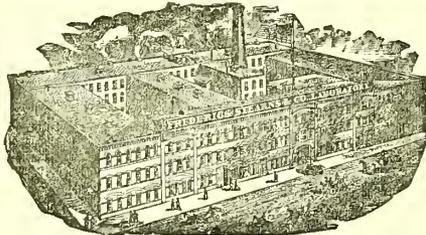
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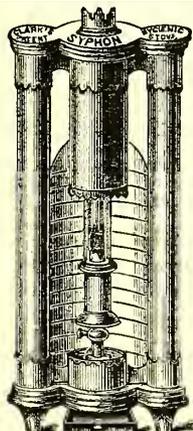
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THE ONLY SAFE RELIABLE PHOSPHORIC REMEDY ever discovered for the Permanent Cure of Brain Wreckage, Paralysis, Sleeplessness, Harassing Dreams, Premature Decay of Vital Power, and all Functional and Diseased Conditions of the System dependent upon the Deficiency of the Vital Forces. It

Cures Dyspepsia, Nerve and Heart Disease.
 Cures Kidney and Liver Complaints.
 Cures all Blood Disorders.

Cures Consumption and General Debility.
 Checks all Wasting of the Vital Forces, from whatever cause arising.

THE EFFECT of this Remedy in Nervous Debility and its Kindred Evils is Immediate and Permanent, all the Miserable Feelings and Distressing Symptoms disappearing with a rapidity that is REALLY MARVELLOUS.

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Actually creates new Nervous Fluid and Brain Matter, by supplying the Blood with its Electric Life Element—PHOSPHORUS, the very core and centre of the Brain itself—Restoring the fullest and most Vigorous conditions of Robust Health of Body and Mind, so that all the Duties of Life may be pursued with Confidence and Pleasure, and whilst pleasant to the taste never fails to Purify and Enrich the Blood, and thoroughly invigorate the Brain, Nerves, and Muscles. Its Energising effects are shown from the First Day of its administration by a Remarkable increase of Nerve and Intellectual Power, with a Feeling of Courage, Strength, and Comfort, to which the Patient has long been unaccustomed. Digestion is Invigorated. The Appetite increases wonderfully. The Bowels become regular. Sleep becomes Calm and Refreshing. The Face becomes fuller, the Lips red, the Eyes Brighter, the Skin Clear and Healthy, and the Hair acquires Strength, showing the importance of its action on the Organs of Nutrition.

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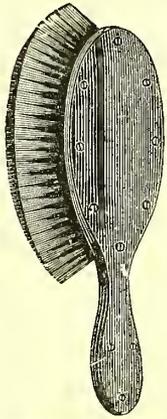
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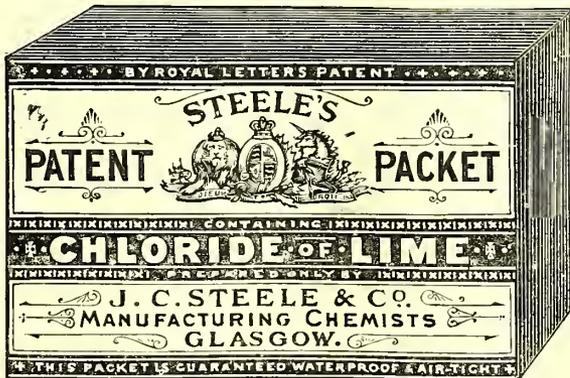
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In vials, with topped corked and camel's-hair brush, in a case. With artistic label, Chemist's own name, full directions.

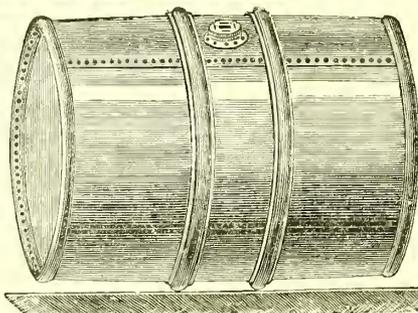
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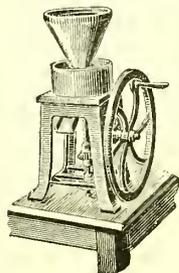
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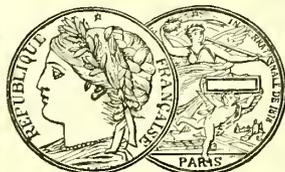
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1st Award, First Grand Silver Medal to Samuel Clarke, London, for his Patent Pyramid Night Lamp Food Warmer.

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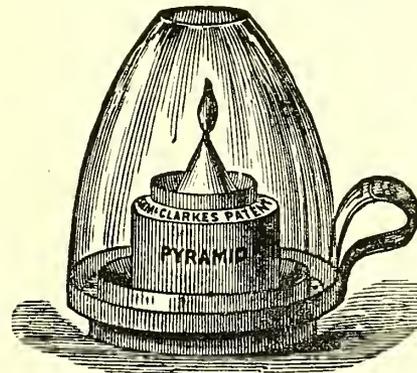


PRIZE MEDAL AWARDED, LONDON, 1873.
PRIZE MEDAL AWARDED, PARIS EXPOSITION, 1867.

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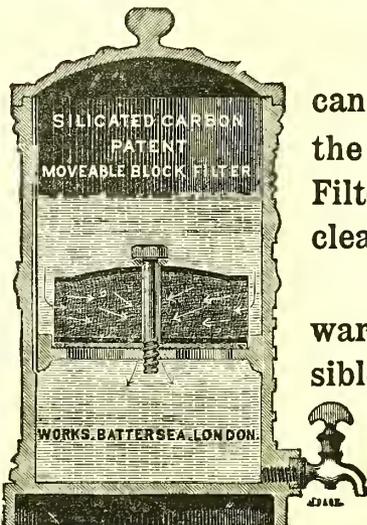
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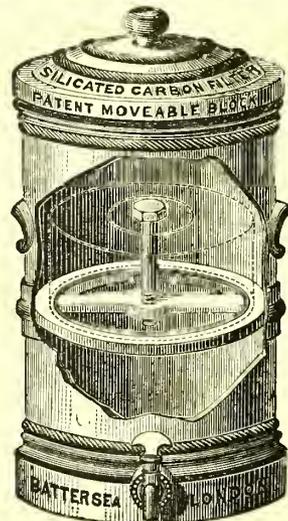


(Section.)

The Silicated Carbon Block can be instantly removed, leaving the whole of the interior of the Filter OPEN for inspection and cleansing.

The working parts are stone-ware, and no corrosion is possible.

No loose Pan or inner vessel to cause breakage.



(Elevation with Block removed.)

LIBERAL DISCOUNT TO THE TRADE.

Domestic Filters (as above), in Cream-coloured Stone-ware, with Plated Taps and Patent Movable Blocks :-

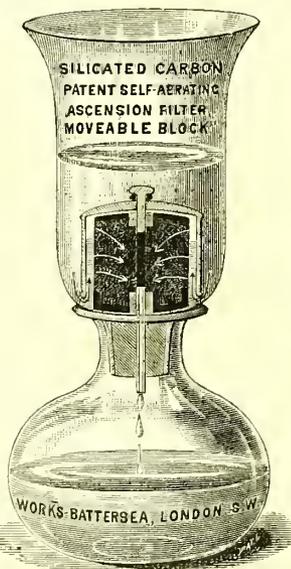
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| No. 27. O. 1/2 gal. 10/6 each. | D. 6 gals. 42/- each. |
| A. 1 " 14/6 " | E. 8 " 52/- " |
| B. 2 " 21/- " | F. 12 " 70/- " |
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Dining Room Filters, in Marbled China, with Plated Taps and Patent Movable Blocks :-

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|---------------------------------------|
| No. 22. A. 2 gals. 35/- each |
| B. 5 " 80/- " |
| Refrigerative Terra Cotta, do. do. :- |
| No. 25. 2 gals. 31/6 " |

THE NEWEST AND MOST EFFICIENT TABLE FILTER.

The water ascends in the direction indicated by the arrows, and each time the top glass is filled the air under the porcelain cover is forced through the Silicated Carbon Block, which is thus automatically aerated.



By simply removing the glass peg the Silicated Carbon Block is at once released for cleansing or renewal.

The Carbon Blocks are efficiently cleansed by boiling, and extra blocks can be supplied with each Filter when desired.

No. 38.

PLAIN GLASS.

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|-------------------------------|
| No. O-1 Pint 2/6 each. |
| " A-2 " 4/- " |
| " B-3 " 5/6 " |

No. 38.

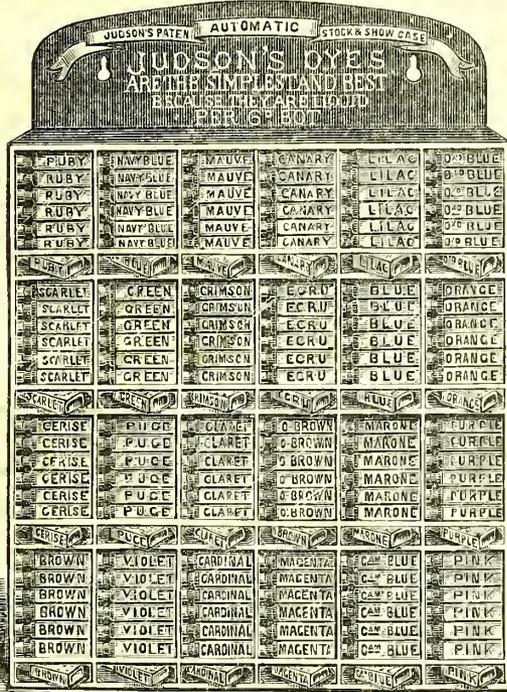
ENGRAVED GLASS.

- | |
|-------------------------------|
| No. O-1 Pint 3/6 each. |
| " A-2 " 5/6 " |
| " B-3 " 7/6 " |

FOR FULL ILLUSTRATED LISTS WRITE TO THE

SILICATED CARBON FILTER COMPANY,
CHURCH ROAD, BATTERSEA, LONDON, S.W.

THE LATEST INVENTION !!!



THE NEW PATENT SHOW CASE,

SHOWN IN THE ABOVE DRAWING,

is made to hold 7 Bottles of each of the 24 Leading Colours of

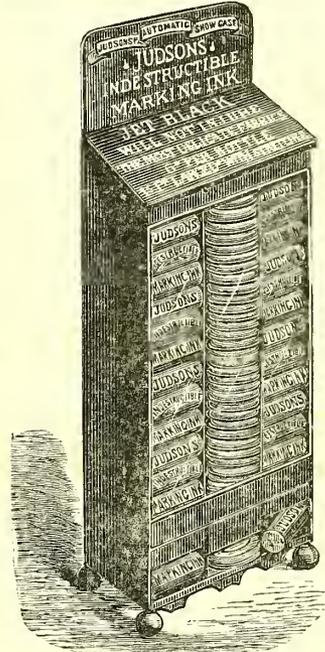
"JUDSON'S DYES."

CASE WITH CONTENTS COMPLETE,

48/- (subject).

This is the most attractive and convenient Show Case ever offered to the Trade; may be hung up, or will stand on counter.

The Bottles are so arranged that when one is removed another immediately takes its place.



AUTOMATIC SHOW CASE,

TO CONTAIN

3 dozen 6d. and 3 dozen 1s.

OF

JUDSON'S "INDESTRUCTIBLE" MARKING INK.

PRICE COMPLETE WITH CONTENTS,

36/- (subject).

To stand on counter, or may be hung on wall.

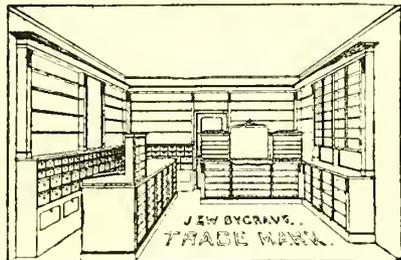
Wherever these Cases are shown the sale is very large, and this Marking Ink, which is an entirely new invention, is the only Marking Ink ever invented that is absolutely indelible.

DANIEL JUDSON & SON, L^{IM}.

77 SOUTHWARK STREET, LONDON, S.E.

J. & W. BYGRAVE,

SHOP FITTERS,



12 CURZON STREET, WENLOCK STREET, HOXTON, LONDON, N.

Note the letters we receive in receipt of work done by us.

From Mr. JAMES, Chemist, 260 Upper Street, Islington, N.—“I feel it is only due to you to say that this is now the third shop you have fitted for me to my entire satisfaction, and at prices considerably below other fitters.”

From Mr. ALEXANDER, Chemist, Banff.—“The screen and counter case came to hand yesterday; I am very well pleased with them both, and when I get them fitted up they will have a very effective appearance.”

From Mr. FREEMAN, 89 Linthorpe Road, Middlesborough.—“I am delighted with the wall fitting: it is well worth what I paid you for it.”

From Mr. KAY, Chemist, 143 Northenden Road, Sale, Cheshire.—“The drawers arrived on Friday and glass cases yesterday, quite safe; I am very much pleased with the work, and shall be glad to answer any references.”

From Mr. FOSTER, 25 Charlotte Street, Landport.—“Cases duly to hand; I like them very much; shall know where to send when I require anything else in that way.”

From Mr. AYRE, Chemist, Market Place, Thirsk.—“I duly received dispensing screen and show case, and I am very pleased with the style and workmanship, and I consider your price most reasonable, as you are much below others.”

£45.

Complete Fittings for Chemist's Shop, Fizing included. Save 5 per cent.

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MEDICAL AND GENERAL

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WRITERS, DECORATORS, &c.

SEND FOR OUR ILLUSTRATED LISTS.

Best Manufacture and Seasoned Wood.

£50

COMPLETE FITTINGS

FOR

CHEMISTS' SHOPS.

£100

COMPLETE FITTINGS

FOR

CHEMISTS' SHOPS.

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THE BEST AND CHEAPEST HOUSE IN THE TRADE IS

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The Midland Medical Fitting and Druggists' Sundries Warehouse,

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THE COMPLETE FITTINGS OF A CHEMIST'S SHOP,

From £45 upwards.

WRITE FOR ILLUSTRATED LISTS.

"THE CHEMIST"

This handsome Dispensing Counter is manufactured in Spanish mahogany, and of the best workmanship, so that it will stand any climate.

The counter has a solid mahogany top, and plate-glass case front. The centre part fitted to take sponge.

A mahogany screen on top, consisting of two plate-glass cases, with shelves inside, and large plate-glass mirror in the centre, and three glass tablets with gold writing in ornamental mahogany carved work.

The back of screen fitted with small shelves and a glass poison cupboard.

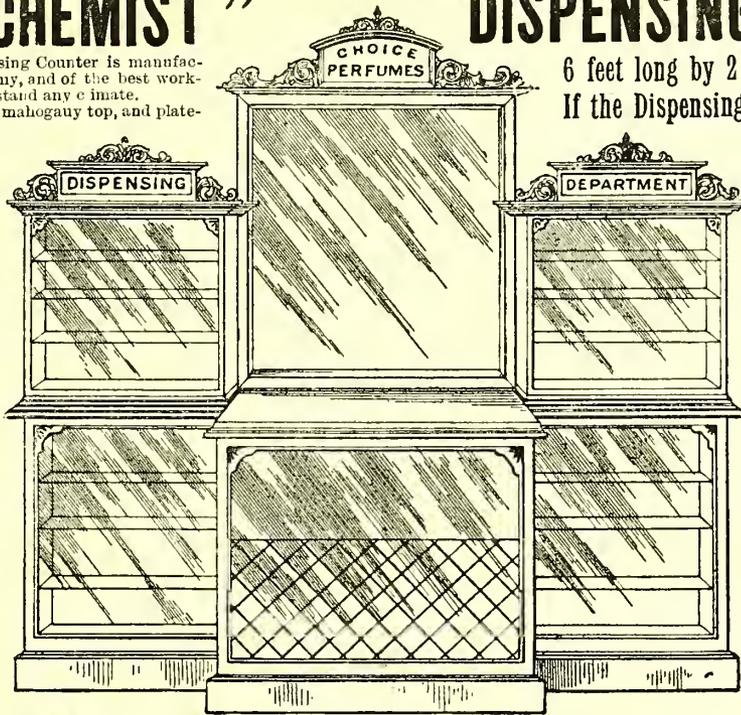
The inside of counter fitted with strong counter drawers, label and cork drawer, open shelves, &c.

NOTICE.

BOWLING & GOVIER are makers and designers of—

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- 'THE SPECIAL' Dispensing Counter.
- 'THE CHEMIST' Dispensing Counter.
- 'THE PRIZE' Dispensing Counter.

Illustrations and prices upon application.



DISPENSING COUNTER

6 feet long by 2 feet wide ... £24
If the Dispensing Screen only, £21



NOTICE TO THE TRADE.

In consequence of inferior Secondhand Goods being sold for our make, we have found it necessary to protect our reputation for best work with a Trade Mark, as above, and unless goods are so stamped we cannot be answerable.

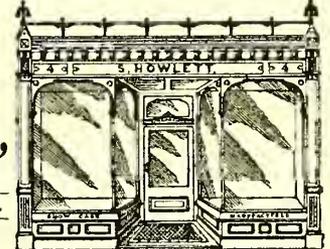
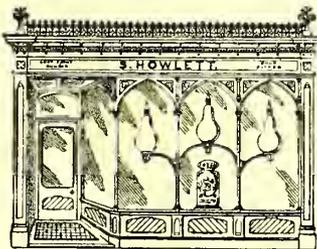
BOWLING & GOVIER,

MANUFACTURERS OF HIGH-CLASS SHOP FITTINGS,
GUN STREET, BRUSHFIELD ST., BISHOPSGATE, E.C.

ESTABLISHED 1830.

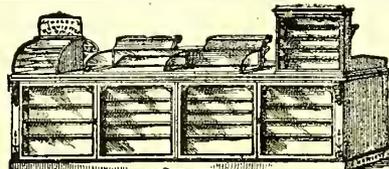
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EXPORT ORDERS CAREFULLY PACKED AND SHIPPED.



SHOPS FITTED by Contract, in Town or Country, with every requisite, on the most improved principles, and at lowest prices.

NUMEROUS REFERENCES may be obtained of Leading Chemists in all parts of the Kingdom.



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GEORGE TREBLE & SON will have pleasure in waiting on firms about to furnish or make alterations, and supply them with Designs, Plans Estimates, and a'l necessary information, free of charge.

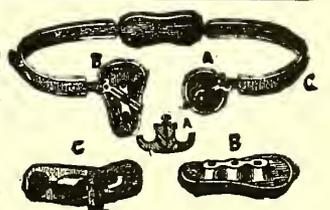
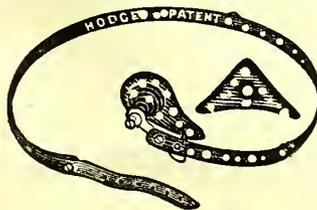
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The *Lancet*, in recommending Hodge's Truss, on Oct. 3, says:—"The pad gives an elastic pressure—a very great advantage—enabling it to be worn with great comfort. The truss is light, though strong; possesses such advantages that it is comfortable, adapts itself readily to the movements of the body, and is very effective."

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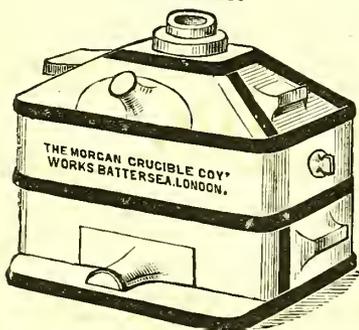
BATTERSEA WORKS, LONDON, S.W.

PORTABLE FURNACES,

FOR USE WITH CHARCOAL, COKE, &c.

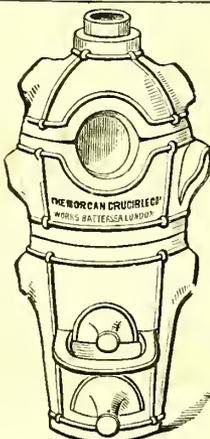
IRON BOUND. INTERIOR DIMENSIONS.

TUBE.



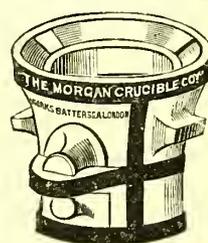
No.	Long.	Wide.	Price.
1	9½ in.	5½ in.	£0 16 0
2	10 "	6 "	0 18 0
3	10½ "	6½ "	1 0 0
4	13 "	6½ "	1 5 0

UNIVERSAL.



22 ins. high with chimney (3½ ins.), 9 ins. wide out, 6 ins. wide in, 15s.
The UNIVERSAL FURNACE, useful for Laboratory. For distilling, as shown in engraving, 1 pipit capacity, Recond, 20s. per dozen; with Mouth Ring, 3s. extra, for flutes 7 x 3½ x 2½ (flutes, 12s. per dozen); Ring for tube use, 3s. extra. Base to stand Furnace on lecture table, 3s.

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No.	Diam. Inside.	Price. s. d.
1	4½ in.	2 6
2	5½ "	3 6
3	6½ "	4 6
4	8½ "	6 0
5	10 "	8 0
6	10½ "	12 0
7	11½ "	15 0
8	13 "	18 0

NOTICE.—Care should be taken when indenting to specify

THE MORGAN CRUCIBLE CO. (Sole Manufacturers of Morgan's and Salamander Crucibles), Battersea Works, LONDON, S.W.

HIGHEST AWARDS OF MEDALS AND DIPLOMAS OVER ALL AMERICAN AND FOREIGN COMPETITORS, AT MORE THAN THIRTY INTERNATIONAL, STATE, AND LOCAL EXPOSITIONS.

MEDICAL JURORS' AWARD, PHILADELPHIA, 1876.

"ORIGINALITY: The successful application of Rubber as a base for medical and mechanical plasters."
"RELIABILITY and general excellence of manufactures."

A VERDICT UNIVERSALLY SUSTAINED.

Firmly recognising the fact that the success of the medical practitioner and the surgeon depends in no small degree upon the integrity of the remedial agents and appliances which they employ, we have persistently adhered to the policy of making, in all our products,

BUT ONE QUALITY, AND THAT "THE BEST."

Our facilities for the production of our specialities are unequalled in extent and completeness by any other concern in the World. Our establishment represents an industry of which we are the founders, and which owes its universal recognition to our investigations and our efforts to bring these preparations up to Pharmacopœial standards and the necessities of medical and surgical practice.

The status of the whole plaster business is well shown by the analysis of Belladonna Plasters, the leading article on the list of spread goods, made in March, 1886, by Dr. Albert B. Prescott, Professor of Chemistry at the University of Michigan, and President of the American Chemical Society, from goods purchased by him in open market. The assays were made by the same process, in parallel operations, for the quantity of total belladonna alkaloids, estimated as atropine, with the following results:

BRAND OF PLASTER.	Per Cent. of Atropine in the Plaster Mass.	Quantity of Atropine in one Plaster (avg.)
Seabury & Johnson	0.39	0.543 grains
Grosvenor & Richards	0.17	0.264 "
T. W. Heinemann	0.15	0.230 "
Geo. E. Mitchell (Novelty Plaster Works)	0.05	0.045 "
The Porous Plaster Co. of the Village of Sing Sing, Proprietors of Alcock's Porous Plaster (Star Brand)	0.06	0.062 "

We have repeatedly demonstrated the

SUPERIORITY OF OUR ABSORBENT COTTON, LINT, AND GAUZE,

and the utter lack of absorbency which characterises several other makes. This is a matter easily tested by dropping a bit of the cotton or lint into water, and noting the rapidity with which it sinks to the bottom. Extreme absorbency is important when absorbent materials are desired at all. Some of our competitors are crafty enough to purchase our own lint and cotton, and re-wrap them under their own labels, for the purpose of making tests, but uniform excellence will be found only in goods bearing our brand.

THE PERFECTION OF OUR GOODS

means an outlay of time and money which forbids our attempting to compete for the "Cheap John" trade, but no other manufacturer can place upon the market goods equal in quality to our own at as reasonable prices as prevail throughout our list.

DISCHARGED EMPLOYEES AS WOULD-BE COMPETITORS.

We are obliged to issue a word of caution to physicians and the trade against parties who advertise themselves as manufacturers of plasters, and base their claims to confidence on the assertion that they have, at some time or other, been in the employ of Seabury & Johnson. This claim is usually made to convey the impression that the claimant was our "Superintendent," or occupied some position which made him master of the details of our business, and qualified him to operate works of this class. Thus far among those who have attempted to trade upon their past connection with us are a discharged night-watchman, a foreman of one of our departments, and a former engineer and general mechanic. Not one of these men possesses or can possess the slightest knowledge of pharmacy, and no man has ever left any department of our factory whose services it was worth while to retain. Nearly every merchant, especially if he be also a manufacturer of anything, has had experiences similar to our own, and in view of the facts stated will readily understand, when offered goods claimed to be made after the formulas or by the process employed by us, that all such claims are spurious and are made with fraudulent intent, and that the goods will in no way resemble our own, either in their composition or their durability. A fact of which further assurance can be obtained from a careful comparison of analysis of the two makes. We have taken legal steps to protect the trade and ourselves from the fraudulent pretensions of this class of pretenders, which is liable to be increased every time we discharge an employé.

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PROPRIETORS OF THE SEABURY PHARMACAL LABORATORIES,

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