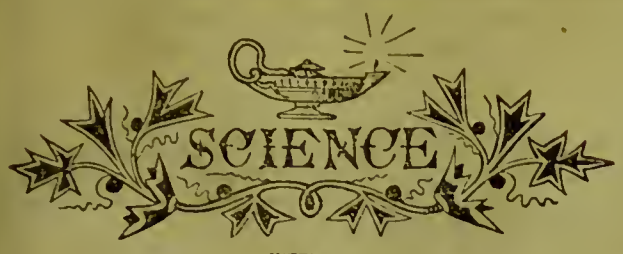


THE CHEMISTRY OF THE PHARMACOPŒIA

ACCORDING TO MODERN THEORIES.

BY JOHN CARGILL BROUGH.

II.

Combination by volume. The *specific gravities* of gases and vapours are usually referred to atmospheric air as unity, but hydrogen being the lightest body known, forms a more convenient standard. Now it is found that the particular bulk or volume which corresponds to 1 part by weight of hydrogen corresponds to 14 parts by weight of nitrogen, to 16 parts by weight of oxygen, and to 35.5 parts by weight of chlorine. Hence the specific gravities, or comparative weights of equal volumes of hydrogen, nitrogen, oxygen and chlorine, respectively, may be indicated by 1, 14, 16 and 35.5, the numbers adopted by modern chemists to express the proportional combining weights of these elements. In like manner the specific gravities of most of the volatile elements, when in the gaseous state, coincide with their atomic weights. Thus, at equal temperatures, equal volumes of sulphur vapour, bromine vapour, iodine vapour, and the standard gas hydrogen correspond respectively to the weights 32, 80, 127 and 1. The symbols H, N, O, Cl, S, Br, I, therefore represent *equal volumes* of the elementary gases and vapours, compared under the same conditions of temperature and pressure; H Cl, the formula for hydrochloric acid, implies a combination of one volume of hydrogen with one volume of chlorine; H_2O, water, a combination of two volumes of hydrogen with one volume of oxygen; H^3N, ammonia, a combination of three volumes of hydrogen with one volume of nitrogen.

In the language of the atomic theory this relation of bulk to weight may be expressed by saying that equal volumes of the elementary gases contain equal numbers of atoms. The actual number of atoms in a given volume of gas cannot of course be determined, but if we admit that every atom of oxygen is sixteen times as heavy as an atom of hydrogen, and find that the comparative weights of equal volumes of oxygen and hydrogen are as 16 to 1, it necessarily follows that these equal volumes contain equal numbers of atoms.

Primary Types of Chemical Combination. The four hydrides, hydrochloric acid, H Cl, water, H_2O, ammonia, H^3N, and marsh gas, H_4C, are general types or models representing as many groups of compounds. A clear conception of the construction of these typical bodies may be said to be the key to the new chemical philosophy. In the present section I propose to bring before the reader the principal results of experimental inquiries into the composition of these four hydrides.

Hydrochloric acid, the only known compound of hydrogen and chlorine, is a gas of ordinary temperatures. The pharmaceutic hydrochloric acid (Acidum Hydrochloricum, B. P.) is an aqueous solution of this gas. Hydrochloric acid gas may be prepared by the direct union of its constituent elements. If a given bulk of dry hydrogen be mixed with an equal bulk of dry chlorine, and the mixture exposed to the influence of sunlight, the two gases combine to form hydrochloric acid gas. The combination takes place without condensation; in other words, the resulting compound gas occupies exactly the same space as the two constituent gases occupied prior to their union. Representing equal volumes by equal squares the *volumetric* structure of hydrochloric acid may be thus expressed:—

1 vol. of hydrogen + 1 vol. of chlorine = 2 vols. of hydrochloric acid.

Now, as the volume-weights or specific gravities of hydrogen and chlorine are 1 and 35.5 respectively, the composition of hydrochloric acid by *weight* may obviously be expressed as follows:—

1	+	35.5	=	36.5
Hydrogen.		Chlorine.		Hydrochloric Acid.

Regarding 1 and 35.5 as the relative weights of the ultimate atoms of hydrogen and chlorine, we may say that one *atom* of hydrogen unites with one *atom* of chlorine to form a *molecule* of hydrochloric acid.

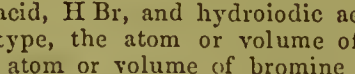
Seeing that 36.5 represents the weight of two volumes of hydrochloric acid, it is evident that the specific gravity, or weight of a single volume of this compound gas, must be represented by the half of this number, or 18.25. As a general rule, the specific gravities of *compound bodies*, when in the gaseous state, are found to coincide with the *halves* of their molecular weights; hence if an atom of hydrogen or other gaseous element be represented by ☐, the molecule of a gaseous compound must be represented by ☐☐. The constituent atoms or volumes of a volatile compound, no matter what their number may be, all become condensed into two volumes, as is evident from the fact that the specific gravity or single-volume-weight of the compound is the half of its molecular weight. The quantity of an element that is strictly comparable to the molecule of a compound body, must accordingly be represented by two atoms. Hence the symbols H H, H Cl, Cl Cl, represent comparable quantities of hydrogen, hydrochloric acid and chlorine respectively. When modern chemists speak of the *molecule of an element*, they refer to two atoms or two volumes; and there are good reasons for believing that the atoms of an elementary body actually unite together in pairs when they are not associated with the atoms of other elements.

The composition of hydrochloric acid by volume and by weight, as well as the specific gravity of the gas referred to hydrogen as unity, are implied in the following succinct expression:—

H Cl = 2 vols.

Hydrobromic acid, H Br, and hydroiodic acid, H I, belong to the same type, the atom or volume of chlorine being replaced by an atom or volume of bromine or iodine. The metallic chlorides, bromides, and iodides in which different metals take the place of hydrogen, may also be referred to the type of hydrochloric acid.

Water, the second typical hydride, assumes at different temperatures the solid, liquid, and gaseous states. When submitted to the action of the electric current, water is resolved into its constituents, hydrogen and oxygen, the bulk of the former gas set free being twice as great as that of the latter. Again, when a mixture of two measures, or volumes, of hydrogen with one measure of oxygen is exploded, nothing but water is produced. If the explosion-tube be exposed to a uniform temperature above that of boiling water, the *three* volumes of the mixed gases from *two* volumes of gaseous water or dry steam. The composition of water by *volume* may therefore be expressed thus:—



2 vols. of hydrogen + 1 vol. of oxygen = 2 vols. of gaseous water.

By substituting the volume-weights of hydrogen and oxygen for the squares representing these elements, the composition of water by *weight* is disclosed:—

1 + 1	+	16	=	18
Hydrogen.		Oxygen.		Water.

In the language of the atomic theory the construction of water is explained by saying that two atoms of hydrogen unite with one atom of oxygen to form a molecule of water.

As two volumes of gaseous water correspond to the weight 18, it follows that one volume corresponds to the weight 9. In other words, the specific gravity of dry steam referred to hydrogen as unity is 9.

The symbolic formula for water which accords with the modern atomic weights is $\left.\begin{matrix}H\\H\end{matrix}\right\}O$ or H_2O,

and the concise expression—

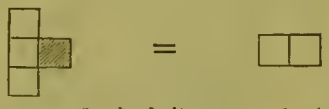
H_2O = 2 vols.

conveys to the scientific chemist all the information given above.

In the British Pharmacopœia the composition of water is represented by the formula *H O*, which signifies a compound of hydrogen and oxygen in equal numbers of atoms, the atom of oxygen being supposed to be 8 times as heavy as the atom of hydrogen. According to this supposition the combining weights of the two elements correspond to unequal volumes. The modern formula H_2O, which implies a combination of 2 atoms, or 2 volumes of hydrogen (each weighing 1) with a single atom or volume of oxygen (weighing 16) is now accepted as the true expression for the molecule of water by the foremost chemists of every country. The striking fact that any definite volume of steam, or gaseous water, contains exactly twice as much hydrogen as the same volume of gaseous hydrochloric acid, seems to prove that comparable molecules of the two bodies must be represented by H_2O and H Cl respectively.

The compounds that may be associated with water are numerous and varied. Thus sulphuretted hydrogen H_2S may be regarded as water in which O has been replaced by S; potassic hydrate KHO, as water in which H has been replaced by K; and potassie oxide K_2O, as water in which H_2 has been replaced by K_2.

Ammonia, like hydrochloric acid, is a gas at ordinary temperatures. It is absorbed by water, the resulting solution being the liquor ammoniæ of pharmacy. Ammonia can be readily resolved into its constituents, hydrogen and nitrogen. From two volumes of the compound gas, *three* volumes of hydrogen and *one* volume of nitrogen may be obtained. The *volumetric* structure of ammonia may therefore be represented thus:—



3 vols. of hydrogen + 1 vol. of nitrogen = 2 vols. of ammonia.

To represent the composition of ammonia by *weight*, the specific gravities or comparative weights of the volumes must be substituted for the squares:—

$$\underbrace{1+1+1}_{\text{Hydrogen.}} + 14 = 17$$

Nitrogen. Ammonia.

As 17 corresponds to two volumes, the weight of one volume, or the specific gravity of ammonia is necessarily 8.5, the volume of hydrogen being taken as 1.

The atomic construction of the molecule of ammonia may be explained by saying that three atoms of hydrogen are united with one atom of nitrogen. In chemical symbols the molecule of ammonia is written thus—

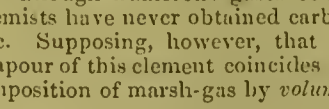
$$\left.\begin{matrix}H\\H\\H\end{matrix}\right\} N;\ \text{or more simply, thus } H_3N.$$

The proportional weights and volumes of the constituent elements of ammonia, and the specific gravity of this compound may be deduced from the following succinct expression:—

$$H_3N = 2 \text{ vols.}$$

Numerous organic compounds are comparable to ammonia. The inorganic bodies hydric phosphide H_3P, and hydric arsenide H_3As obviously belong to the same molecular type.

Marsh-gas, so called from its frequent emanation from boggy ground, is a compound containing, in two volumes, *four* volumes of hydrogen condensed; the other constituent being carbon.* Though numerous gases containing carbon are known, chemists have never obtained carbon by itself in a gaseous state. Supposing, however, that the volumetric weight of the vapour of this element coincides with its atomic weight, the composition of marsh-gas by *volume* may be thus expressed:—



4 vols of hydrogen + 1 *vol.* of carbon = 2 vols. of marsh-gas.

* A misprint in my first article must be pointed out. In line 41, page 18, the word *three* is printed instead of *four*. The blunder is so obvious that I have no doubt it has been corrected by most of my readers.

Substituting the combining weights of hydrogen and carbon for the volumes, the composition of marsh-gas as actually determined by experiment is disclosed; thus—

$$\underbrace{1+1+1+1}_{\text{Hydrogen.}} + 12 = 16$$

Carbon. Marsh-gas.

The specific gravity of marsh-gas referred to hydrogen as 1 is found to be 8, and accordingly conforms to the general rule that the specific gravity of a compound gas coincides with the half of the molecular weight.

Adopting 12 as the atomic weight of carbon, most modern chemists represent the molecule of marsh-gas by the formula $\left.\begin{matrix}H\\H\\H\\H\end{matrix}\right\}$ by the more convenient formula H_4C. In the British Pharmacopœia the atomic weight of carbon is given as 6, and those chemists of the old school who adopt this weight represent the molecule of marsh-gas by the formula H_2C. Having taken H Cl, H_2O, and H_3N as the formulæ of hydrochloric acid, water, and ammonia respectively, modern chemists find that the molecular structure of marsh-gas must be expressed thus:—

$$H_4C = 2 \text{ vols.}$$

In the Pharmacopœia an important compound belonging to the marsh-gas type is described. This is chloroform, $Cl_3H\,C$, which may be regarded as marsh-gas in which 3 atoms of hydrogen have been replaced by 3 atoms of chlorine.

BRITISH PHARMACEUTICAL CONFERENCE

SUBJECTS FOR PAPERS, 1866.

In June last we enumerated the proposed subjects for investigation that had been accepted by members of the British Pharmaceutical Conference. At the Birmingham meeting papers were read on the fifteen subjects, numbered 44, 45, 55, 63, 75, 105, 107, 109, 113, 114, 117, 119, 127 and 32. The remaining subjects have not yet been elucidated, but we have good reasons for believing that many of them are now undergoing investigation.

The following new subjects have been suggested and accepted:—

82. Report on the strength and condition of commercial specimens of Mercurial Pill and Mercurial Ointment. Accepted by F. B. Benger.

140. A third paper resulting from the application of microscopic Analysis to Pharmacy. By H. Deane and J. Brady. 141. Also one by G. F. Schacht and T. Stoddart.

142. Ergot. Wenzell has recorded (Amer. Journ. of Pharmacy, vol. xxxvi. p. 193) the isolation of two alkaloids—Ecbolina and Ergotina—from Ergot. It is proposed to repeat his experiments. Accepted by R. Reynolds.

146. Extractum Carnis. On the organic principles contained in this substance when prepared by Liebig's method. Accepted by R. Reynolds.

147. Extractum Carnis. Examination of its mineral constituents, and inquiry concerning the possibility and utility of introducing into medicine a fictitious article of uniform composition. Accepted by T. B. Groves.

148. Extractum Carnis. (Physical Condition.) Microscopical Appearances of the Crystalline Body contained in it sufficiently characteristic to yield any test of the value of various samples of the extract? Accepted by H. Deane and H. B. Brady.

150. Toxicology. Are plants of the natural order Solanaceæ at any time poisonous to wild rabbits? If so, is the flesh of the animal poisonous to man? Accepted by J. Tuck.

151. On the nature of the action of the Iodohydrargyrate of Potassium test for Methylic Alcohol. Accepted by J. Tuck.

155. Pharmaceutical Ethics. Accepted by J. Inman. In the circular already sent to members of the Conference, Mr. Inman says:—"It is obvious that any such essay, being merely the expression of an individual mind, would be comparatively worthless; may I, therefore, venture to ask our members to contribute any hint or information of their own to the matter, or to mention points they may think ought to be included."

CRYSTALLIZED CITRATE OF MAGNESIA.

M. Porret, in a paper read before the Chemical Society of Paris, describes a simple process for preparing a crystallized citrate of magnesia from lemon juice which might be profitably carried out in Sicily; and proposes this salt as a substitute for the unstable products now imported by English and French manufacturers of citric acid. The paper is printed at length in the *Chemical News* for March 2, and as it seems to throw some useful light on an interesting pharmaceutical subject, an abstract of it will not be out of place in these columns. The process consists in making an insoluble tribasic citrate of magnesia, and transforming this salt into a crystallizable bibasic salt. The tribasic salt is formed by treating the fresh lemon juice with excess of magnesia. It separates from the hot juice as a granular powder, which must be freed from mother liquor by washing with cold water and then dried. This crude product, unlike the commercial citrate of lime, does not become mouldy, and might be safely despatched to places where citric acid is made. It is better, however, to convert this salt into a dibasic citrate, so that it may carry an extra load of acid. To effect this conversion M. Porret treats a given weight of the tribasic citrate with a fresh quantity of lemon juice, equal to that used in the first operation; throwing the tribasic salt in small portions into the hot juice. The solution thus formed having been left for a time to deposit insoluble matter, is decanted and evaporated in vessels as wide as possible, until the boiling solution marks 23° * It is then allowed to cool, and in ten hours' time a crystalline deposit of the bibasic citrate will be found. The crystallization may be allowed to go on for about ten days. The bibasic citrate may be obtained by the same process from citric acid and magnesia or carbonate of magnesia; so that for pharmaceutic purposes the crystallized salt can be very easily prepared. According to M. Porret an excellent lemonade may be prepared with this salt, by the following formula:—

Crystallized Citrate of Magnesia	80	grammes
Sweetened and flavoured liquid ..	350 to 400	,,
Bicarbonate of Soda	4	,,

NEW PORTABLE MERCURIAL BAROMETER.

We learn from *The Reader*, that Geissler, of Bonn, so well known for his vacuum tubes to illustrate the effects of induced electricity, as well as many other useful forms of apparatus for experiments in natural philosophy, has constructed a very compact mercurial barometer for travellers. It consists of a strong glass tube of the required length, permanently fixed in an iron frame; this case is made of two equal and precisely similar parts, connected at one end by a strong brass hinge, so that the two parts can be shut together like the covers of the long "metallic memorandum books," which merchants use. To allow of this being done, the glass tube itself has a peculiar construction; it also is made in two parts, and the two ends which are set into the brass hinge are connected by being bent towards each other at a right angle and then most carefully ground the one into the other. The brass hinge thus fills the double office of connecting the two halves of the case, and of giving support to the glass hinge of the tube itself. A spring at the side supplies just sufficient pressure to enable the glass hinge to turn freely. The upper half of the glass tube is rather less than half an inch in diameter, and is of course closed at the top. Along its side runs a millimetre scale, with vernier and sighting ring graduated down to fifteen inches below the normal height of the barometric column. To reduce the weight as much as possible, the lower half of the tube has a much finer bore, but its slender proportions are protected by its being inclosed in an outer glass tube of the same diameter as the upper half; at its lower extremity it bends upwards, and is fused into the cistern. This reservoir is, to all intents and purposes, a little glass stoppered bottle of about an ounce capacity, having three orifices, two at the bottom and one at the top; the upper one is fitted with a hollow glass stopper, which has a small hole in the side and on the ground part, for the escape of the last bubble of air when the cistern is to be completely filled with mercury; of the two orifices in the bottom of the vessel one has already been mentioned as communicating with the vertical column; in the other a small glass tube is inserted, which passes about half way up into the cistern, and is narrowed to a fine point, whilst to its other end, protruding a short distance from the bottom of the cistern, a strong piece of indiarubber tubing is attached, communicating with another piece of stout caoutchouc tube, $\frac{1}{8}$in. in diameter and 5in. long; this receives the excess of mercury when the barometer is in use. It must also be mentioned that the other end of this caoutchouc store-tube is closed with a short glass tube and a cork. For the journey the cistern must be entirely filled with mercury and carefully stoppered. When an observation is to be made the barometer case is opened, fixed rigidly in a plane by means of a sliding plate provided for this purpose on the outer side of the brass hinge, and suspended vertically by the ring at its upper end. The glass stopper is then withdrawn, when the excess of mercury in cistern and column runs down through the little pointed glass tube into the caoutchouc receiver until the metal in the reservoir stands at the same level as the glass point itself—this is the zero from which the millimetre scale is reckoned, so that a reading of the mercurial column can now be made. To reduce the weight to a minimum, as much as possible of the iron plate of the case had been cut away, so that the complete instrument, when filled, weighs only a few pounds. This form of barometer can likewise be had in a wooden frame, in which case, of course, the weight is still less. Its compactness will be acknowledged when it is mentioned that, when shut together, the instrument measures 18in. in length, $2\frac{3}{4}$in. in breadth, and $1\frac{1}{2}$in. in thickness. An objection might be raised to this form of barometer resting on the uncertainty whether a glass hinge of this nature, however carefully ground, will remain air tight for any length of time. Some years of practical working with the instrument will be required to decide this question.

* 23° of Baumé's Hydrometer, which is generally used on the Continent for determining the strength of a solution, indicates the specific gravity 1·178.

NEW PHOTOGRAPHIC PRESS FOR PRINTING.*

In all the ordinary methods of mechanical printing, gradation from light to dark is obtained by the use of lines or dots, which, having other or broader surfaces, and being ranged in close proximity or spread wide apart, the spaces between being absolutely white, give the effect of the lightest tints or the deepest shades. This is the case whether the ink be applied to the portions in relief of a woodcut, to the hollows of a copper-plate, or to the portions of a flat surface for which it has affinity on a lithographic stone. The ink is, in each instance, opaque, and gradation is only obtained by breaking its continuity of surface with small spaces of white. In photographic printing, gradation is obtained by different depths of a continuous tint, resembling in effect, successive washes of a transparent pigment in water-colour painting. The difficulty of reproducing this by mechanical means has been the obstacle in all attempts at photo-engraving, photo-lithography, or photo-block printing, and it has been for some time past admitted that the only means of success in this direction would consist in a method of translating the half-tone of gradation of tint into the half-tone of grain or stipple.

In Mr. Woodbury's photo-relief printing, the end is secured, without any such translation; the picture is produced with every gradation of a continuous tint, and by mechanical printing, sufficiently rapid to compete with copper-plate or lithography. To do this, however, it has been necessary to introduce a distinctly new principle into printing operations, and to prepare a plate which should apply or give up to the paper different proportions, in different parts, of a semi-transparent ink, according to the depth of tint required by different portions of the picture. This is the problem which Mr. Woodbury has solved, and we may remark, in passing, that we see no reason why the same principle might not find valuable application in the ordinary process of printing from engraved intaglio plates.

Mr. Woodbury's photographic intaglio is very simply obtained. The image in relief having been produced by the action of light through a negative on a film of bichromated

* From the *Photographic News*.

gelatin, this gelatin relief becomes the matrix from which an indefinite number of metal plates, in intaglio, may be produced. The metal used resembles type-metal. A plate of this metal, about a quarter of an inch thick, with a perfectly plane surface, is placed in contact with the gelatin relief, and subjected to hydraulic pressure, by which a perfect transcript of every gradation in the gelatin is produced on the metal. Notwithstanding the softness of the metal, but slight traces of wear or deterioration is observed after some thousands of impressions have been taken from a plate. If the plate needed to be cleaned for each impression, like the copper-plate, or if it were necessary to submit it, in printing, to a heavy or rolling pressure, it would doubtless be necessary to subject it to some hardening process; but the pressure being light and steady, this is not necessary. The process, moreover, of producing a new plate from the gelatn relief is just as simple and easy as producing a print on paper.

The method of printing is easier than any other with which we are familiar. In the various modes of photographic printing—except the collodio-chloride—several operations are necessary to render the paper sensitive to light, and several others are required to tone and fix the image when obtained. In the various mechanical printing processes, some skill and care are requisite to keep the ink properly distributed on the roller, and to transfer it from the roller evenly to the surface of the plate or stone. But in the new method of printing, a little of the ink—which consists of a warm solution of gelatin and lamp-black, with a little crimson lake—is poured on the surface of the plate, where it stands in a little pool in the centre; upon this the paper is placed, the platen is brought down, giving the slight pressure necessary, which at once spreads the ink over the surface and drives off at the edges all that is not required to form the picture. In a few seconds the gelatin has congealed, and the paper, being lifted up, brings with it all the ink from the depressions on the plate. The printing is indeed rather a process of casting than of printing as ordinarily understood, and the picture is a relievo in coloured gelatin, taken from a very shallow metal intaglio. As the gelatin dries, it of course contracts, and the finished picture shows very little effect of relief or impasto. As the colouring matter is carbon, the permanency of the pictures is tolerably certain.

If the picture were left in this state it would be readily liable to injury from moisture, although not more so than a water-colour drawing, which is not usually regarded as a very unstaple form of art. But it will be obvious that there are various modes of rendering a film of gelatin insoluble. Mr. Woodbury has, during the last few months, tried several of these, but has not found any so simple and effective as immersing the print in a solution of strong alum. This at once renders the film insoluble, and, when dried, it is impervious to moisture, and little liable to mechanical injury.

The possible rate of printing remains yet to be absolutely determined. With the mechanical appliances improvised for experiment, and the amount of manual skill obtained in the prosecution of experiments, Mr. Woodbury has been enabled to produce, single-handed, one hundred and twenty prints in an hour. In the production of several thousands required for our readers, all the experience and skill necessary in the successful working of any process had to be acquired, and the last two or three thousand are not only better in quality, but have been produced with more ease than the first two or three thousand. In each day's work with one pair of hands there are necessarily many interruptions, in preparing fresh ink and paper, clearing away accumulated prints, etc., but we find the smallest number produced in a day's work of six hours and a half to have been 403 prints, and the largest number in the same time 560 prints. With a little practice and a large number of presses at work, which might easily be managed, we see no reason why the rate of production should not be at least doubled.

VARIA.

William Thomas Brande, the well-known scientific chemist, is dead. He was born in 1786, and commenced his career as a lecturer on Chemistry in 1808. For some time previously he had acted as an assistant to Sir Humphry Davy at the Royal Institution. In 1809 he was made a Fellow of the Royal Society. In 1812 he was appointed Profess Chemistry and Materia Medica to the Apothecaries' Com and in 1851 was elected Master of the Company. In he was made Professor of Chemistry at the Royal Institu and delivered lectures for many years in conjunction Professor Faraday. In 1825 he was appointed superinte of the coining department of the Mint. He was the a of a standard "Manual of Chemistry," a "Dictiona Pharmacy," and other important works of referenc 1853 the University of Oxford awarded him the hor degree of D.C.L.

As upwards of 60,000 flowers of *Crocus sativus* are sai required to form a single pound of saffron, it is not sur that this costly product is often greatly adulterated. florets of the safflower plant and those of the common marigold have been frequently mixed with saffron. February Pharmaceutical Meeting Professor Bentle scribed a new adulteration of saffron which he had d in a sample of the drug that had been submitted to a sale firm in the City by two Spaniards. The Pr proved that the sample contained a proportion of g saffron—the stigmas with part of the style of *Crocus sa* but that it was principally composed of the stamens same plant which had been previously twisted so as t their natural form, and dyed with some orange- colouring matter. For a description of the means em to detect this ingenious fraud, and for various inte botanical details respecting true saffron, we refer our to the Professor's paper in the last *Pharmaceutical Jou*

An "occasional note" on the Cattle Plague in a number of the *Pall Mall Gazette* informs us that *Crocker*, F.R.S., who has taken up the investigations *Hughes Smith*, has reported some remarkable insta complete disinfection, and even apparent destructio cattle plague poison by *carbonic acid* and its congene that some further striking results have been obtained injection of solutions of *hypersulphate of soda*, which h brought to notice by Italian doctors especially as a v antiseptic." The chemists and chemicals here ref appear to be misnamed by our clever contemporar unfamiliar names of "Crocker" and "Hughes Smith surely stand for the famous names of *Crookes* an *Smith*, and we must alter "carbonic acid" to *carb* and "hypersulphate of soda" to *hyposulphite of soda*, our contemporary's statement accord with our knowledge.

THE MONTH

UNITED SOCIETY OF CHEMISTS AND DRUG

MEETING OF THE EXECUTIVE COMMITTEE, MARCH

Present—Mr. Henry Matthews, F.C.S., in th Messrs. Wellspring, D'Aubney, Whincup, Boor, Bicknell, Cawdell, Buott, jun., Loane, Baumgarte Anderson, Wade, King, etc.

In commencing the proceedings, Mr. Buott, j before the meeting a certificate from Dr. Hill, of burgh-square, stating that Mr. Buott, sen., had b his care from the 1st of February last suffering fro calculus and inflammation of the liver, and that he and was still unfit to attend to business. In co of this he had been requested by his father to und Secretarial duties.

Before any business was brought forward, Mr. wished to know whether it was true that a certain the Committee had endeavoured to hold a meeti 1st of February last, notwithstanding a notic adjournment had been sent to all the members of mittee, acting upon which he and other gentlemen matter of course, absent; and he also wished whether the dangerous illness of Mr. Buott, their had anything to do with this occurrence?

Messrs. Wade, Boor, and D'Aubney expressed their readiness to refer to this if necessary.

Messrs. Wellspring, Bicknell, and other gentlemen did not think this advisable.

Mr. Buott, jun., said that he was doing great violence to his feelings in remaining silent upon certain matters. He trusted that that silence would not be misunderstood. It was caused by the imperative necessity for the united and harmonious action of the Committee at the present juncture, and he therefore should beg the gentlemen present at once to proceed to the usual business of the meeting.

The Chairman said he was determined to preserve order, and to carry this out, all personal observations must be avoided.

The minutes were then read and confirmed.

In reporting upon same Mr. Buott, jun., stated that, in accordance with the resolution at the last Committee meeting, the sum of £107 5s. 6d. had been placed to the credit of the Benevolent Fund. He also laid upon the table a list of applicants for certificates of membership. After some remarks from Mr. Boor as to the expediency of issuing them only to members in business on their own account and not to assistants and apprentices, and further observations from gentlemen who thought differently, reference was made to the Registrar's report as to the *bonâ fide* character of the applications, and it was agreed that the certificates be issued.

After some inquiry about the parliamentary action of the Society, it was moved by Mr. Wade, and seconded by Mr. Wellspring, "That the President of the United Society be requested to call upon or to write to the President of the Pharmaceutical Society to ascertain whether it is his opinion that the Council of that Society would be willing to act with the Executive Committee of the United Society in urging and assisting the Government to introduce a Chemist and Druggists' Bill into Parliament, based upon the recommendations of the Select Committee, and submitted to Government at the close of last session."

Mr. Baumgarten decidedly objected to any further overtures being made to the Pharmaceutical Society. The United Society had been treated by the Council with much rudeness, this being the case, he thought it was useless and undignified for the United Society to persevere in this direction.

Mr. Buott, jun., agreed with the mover of the resolution that it strengthened the cause of the United Society by being known that overtures had been made to the Pharmaceutical Society for joint action, but thought (with all due reference to the president) that individual negotiations were more productive of evil than good. The Pharmaceutical Society might hereafter treat this overture as one merely of a personal character between the two presidents, who could only express their own opinions, and thus destroy the parliamentary influence that would ensue from a negotiation of more formal character in which the district associations could take a part. The Council of the Pharmaceutical Society would not give way until they were forced, or, in other words, until they saw it was their duty to care less for their special privileges, and more for the interests of the entire trade. To accomplish this, greater pressure than the plan suggested was required.

Mr. Wade said that he had had the pleasure of being face to face with several members of the Pharmaceutical Council, and that under these circumstances a great deal of misunderstanding had been cleared away. He believed that direct communication was after all the best plan, and that further reference to the district committees of the United Society would only cause delay. The Executive Committee enjoyed the full confidence of the Society, and could act as they seemed best for the interests of the trade. After some further discussion, the resolution was duly carried.

It was then moved by Mr. D'Aubney, and seconded by Mr. Cawdell, "That it is desirable that the monthly meetings of the Executive Committee of this Society be held on the first Thursday in every month, at 2·30 P.M., at their rooms in New Ormond-street, without further notice; and that a copy of the resolution, with dates of the meetings, be sent to each London and Country member of the Committee."

Which resolution was adopted by the meeting.

Some conversation followed as to the desirability of the Benevolent Fund being made as actively useful as possible, and to further this, it was agreed that an amendment to the present rules be suggested for the adoption of the members of the Society.

A vote of thanks to the Chairman closed the proceedings.

For the Secretary and Registrar, C. F. Buott.
Approved, H. Matthews, President.

FOURTH ANNUAL REPORT OF THE BRISTOL DISTRICT ASSOCIATION.

The past year of your District Association in connection with the United Society of Chemists and Druggists has been of varied success. Although the incorporation of the trade, as our primary object, has been necessarily deferred, your Committee congratulate the members upon the progress which has been made; and having confidence in the Federal Head, they believe that their efforts will ultimately be crowned with success, and the chemists and druggists of this country become a corporate body.

Having proved that "union is strength"—that "where there is a will there is a way"—and that by combination we are "a power to be known, and seen, and felt," we must not fail to secure the compactness and efficiency of our body by neglecting the means for another parliamentary campaign, which probably will be as arduous and as exciting as the last.

Our future action must be regulated by past experience; and nothing must satisfy the trade less than the equal rights and complete representation included in the first seven clauses of the Chemists and Druggists' Bill No. 2, as approved by the select committee of the House of Commons, adopted by the executive committee, and now recommended by them to the local committee as a common ground of operation in the admirable address of the Society's fourth annual report.

Your Local Committee have much pleasure in stating that during the past year our members have increased from 24—at which number they stood in their third annual report—to 45. During the same period nine removals have taken place, thus leaving 36 members. The members so removed should not be considered as lost to the Society, but simply removed from one association to another.

It is to be regretted that whilst we already number more than one-third of the entire trade here, nearly another third hold themselves neutral, forgetting that by so doing they are weakening the cause, and protracting the incorporation of the trade, in which they have an equal interest with ourselves.

Your Committee have, through their secretary, remitted to the Executive £9 10s. for membership fees.

The Local Incorporation and Defence Fund, which was commenced in 1864, and continued in 1865, has contributed and remitted through your secretary £10 17s., and 10s. also has been forwarded for certificates of membership, which your committee would be glad to see the members avail themselves of more freely.

The Benevolent Fund has been supported by a few of the members only in their private capacity; but your Committee think it deserves greater and far more general support than it has hitherto received.

With regard to local expenses: owing to an alteration in the rules of the Society, making it incumbent upon each Association to bear its own working expenses, and manage its own local affairs, your Committee have instituted a plan of voluntary subscription amongst the members to defray incidental expenses, and also to raise a fund for sending a delegate to the annual meeting in London. The response to this local demand during the fourteen months ending with this year is that nineteen members have each subscribed 6d.; ten, 1s.; sixteen, 2s.; one, 2s. 6d.; one, 5s.; and one, 10s., making a total of £3 9s., or 48 donations as per annexed statement. After paying £2 10s. towards expenses of delegate to London and back, there remained 19s. only to go towards the expenses incurred at home by the secretary, including stationery, postage, post-office order, and other incidental expenses, his time and labour not being reckoned. This, on the most economical calculation, is found to be deficient by 11s. We find, also, by the experience of the past year, that the local expenses cannot be efficiently worked for less than £4, viz., £1 10s. for secretary's current expenses, and £2 10s for delegate's expenses to annual meeting in London, and this, according to the present list of members, will require from each only the moderate sum of 2s. 6d. per annum.

General Statement of Receipts and Expenditure for the Year ending December 31st, 1865.

Dr.	£	s.	d.	Cr.	£	s.	d.
To Donations from Members, viz., 19 at 6d.; 16 at 1s.; 16 at 2s.; 1 at 2s. 6d.; 1 at 5s.; and 1 at 10s.; 48 donations, total	3	9	0	By Local Expenses, including stationery, postage, post-office order, and petty expenses, as per Secretary	1	10	0
To Balance due to Secretary	0	11	0	By Delegate's Expenses to Annual Festival & Meeting	2	10	0
	4	0	0		4	0	0
				1866. Jan. 1.—By balance forward	0	11	0

By Order of the Committee,
(Signed) WALTER MITCHELL, *Secretary.*

LAW AND POLICE.

SCURVY AND ADULTERATED LIME-JUICE.

ON the 26th ult. Mr. C. J. Carttar, Coroner for Kent, resumed and concluded, at the Beehive tavern, Bridge-street, Greenwich, an inquiry relative to the death from scurvy of Henry Griffiths, one of the crew of the St. Andrew's Castle. Several of the crew were examined, and they spoke well of the provisions on board, which were above the average quality. With respect to the lime-juice, they stated it was excellent, and better by far than that usually served out on board ships, but they never took it unless they wanted it. Captain George M'Baine said that the St. Andrew's Castle was of 659 tons burden, and was a well-found vessel. She belonged to T. Skinner and Co., Glasgow. She was provisioned for the voyage out and home by Spence, Harrison, and Co., provision merchants, of Sunderland. They placed thirty gallons of lime-juice on board in barrels. He served out half an ounce of it daily to each of the crew, and also three ounces and a half of sugar to be mixed with it. The men were, many of them, prejudiced against the lime-juice, it was so tart. It was not his duty to see the men drink it. Mr. Coleman, who appeared to watch the proceedings for the Board of Trade, stated, in answer to the coroner, that in the Royal Navy the men were called up at noon daily and made to drink the lime-juice in the presence of an officer. It was mixed with rum. In the merchant service the captain was only bound to serve it out, not to see it swallowed. Captain M'Baine said he believed that what he served out was good lime-juice. Dr. Henry Leach, medical officer on board the Dreadnought, said that the cases of scurvy brought under his care on the 16th inst. from on board the St. Andrew's Castle were the worst he had ever seen. The man Griffiths died the next day. He had analyzed some of the so-called lime-juice from on board that ship. He was assisted by a chemist of high standing. They found that the fluid was not lime-juice at all. It was either citric acid and water or weak lemon-juice and water, but they believed that it was merely citric acid and water. The mixture was quite inert and useless as an anti-scorbutic. If mariners had good lime-juice on board ship, and if it were taken regularly, 80 per cent. of the cases of scurvy which occurred would never take place. A juror said that he considered the case one of manslaughter. The Coroner said that the firm which supplied the ship were liable to a penalty of £20 under the Merchant Shipping Act,—a fine far too small a punishment for such an offence. It should, however, be borne in mind that the provisions put on board by the same firm were of excellent quality. It was a case which he hoped the Board of Trade would take up, but the offence did not amount to one of manslaughter. The jury returned a verdict—"That the deceased died from scurvy; and the jury further say that the juice shipped on board the St. Andrew's Castle was a chemical decoction perfectly useless as a preventive of scurvy." The coroner said the case of this ship would be brought under the notice of the House of Commons.

THE END OF THE KETCHUP CASE.

At the Southwark police-court, on the 9th inst., Mr. Hope, of the firm of Hope and Co., ketchup, jam, pickle manufacturers, and confectioners, Fort-road, Upper Grange-road, Bermondsey, appeared before Mr. Woolrych on an adjourned summons, obtained against him by the Vestry of Bermondsey, under the Amended Nuisances Removal Act, for having in his possession a quantity of putrid and tainted livers for the manufacture of "Leicestershire Ketchup," such being for human food, and a nuisance to the neighbourhood. Sheil appeared for the vestry, and Mr. W. Edwin attended on the part of the defendant. It appeared that on the 1st of last month, Dr. Parker, the medical officer, Mr. Rushton, the inspector of nuisances to the Bermondsey vestry, entered the defendant's premises and found ketchup in the course of manufacture, and a tub containing a quantity of salted pigs' livers. He seized some that were putrid, and, ascertaining that they were to be used in the manufacture of ketchup, took them before Mr. Woolrych, who at once condemned them, and they were destroyed. The vestry after that directed the present proceedings to be taken under the Amended Nuisances Removal Act. Mr. Sheil said that, according to the evidence of the medical officer, ketchup clearly came within the meaning of 26th and 27th Victoria, cap. 117, sec. 2. Although the livers were not exposed for sale, they were intended for human food. It was the same with diseased or tainted meat boiled for soup. The ketchup was extensively distributed all over the kingdom, and used by the poor. Mr. Edwin denied that the livers were to be used like soup. They were boiled and the liquor was used as a portion of the ingredients prepared in the manufacture of ketchup. The ketchup could not come under the denomination of food. No man could exist on that food. It was a mere condiment, used at pleasure. He contended also, that none of the livers used were tainted in the first degree. If they had been the whole must have been seized. Dr. Parker was recalled, and in answer to his worship stated that his opinion was that the ketchup came within the meaning of the Act of Parliament. It was a condiment used with the food of man. Mr. Woolrych then said he had carefully gone into the evidence, and examined the bearings of the case in relation to the Act of Parliament, and his opinion was that it did not come within the meaning of that Act. When the livers were brought before him he found them very filthy, and considering them to be unwholesome and a nuisance he ordered them to be destroyed, but as to no opinion as to the intended use of the livers remaining, the case did not come within the meaning of the Act under which the defendant was charged, he dismissed the summons. Mr. Sheil said that it was a matter of such vast importance to the public he was instructed to ask for a case for the opinion of the Court of Queen's Bench. Mr. Woolrych was of the same opinion, and granted the case, when the usual recognizances were entered into, and the parties left the court.

A very lengthy report of this case has been published by our contemporary *The Grocer.*

GOSSIP.

A REPORT of the March meeting of the Executive Committee of the United Society will be found in another column. It reached us too late to be made the subject of an original article, but we may here express our hearty approval of the chief resolution passed at the meeting.

The creditors of James Walters, chemist, Derby, have agreed to accept a composition of 5s. in the pound by two instalments of 3s. and 2s. each; trustee, Mr. G. [illegible], Burton-on-Trent.

C. A. McCulloch, druggist, Covent Garden-market, has covenanted to pay his creditors 12s. in the pound by instalments of 2s. as realised, after which it is to be further considered by the creditors whether he should pay less than 20s. in the pound.

William Kirkby, chemist and druggist, 13, St. John's terrace, Longsight, has made an assignment of his effects.

Mr. Thomas Dadford has purchased the business of Mr. W. H. Harris, family and dispensing chemist, 33, Gold-street, Northampton.

Mr. Frederick M. Swindles, druggist, of Blackheath, left his home a few days since, apparently in good health. The following morning his dead body was found in a field he had occupied, about half a mile from his residence. Beside him was a bottle labelled "poison."

The creditors of F. W. A. Alder, trading as Alder Brothers and Co., chemists and druggists, Upper-street, Islington, have agreed to accept a composition of 2s. in the pound

Mr. Benjamin Bury will discharge all claims against the late firm of Henry Bury and Co., manufacturing chemists, Church-lane Chemical Works, Lancaster, and will continue the business on his own account, under the same style as before.

Mr. W. H. Weaver, dispensing and family chemist, Oswestry, has removed to larger premises in Cross-street.

The creditors of William Collins, chemist and druggist, 17, Catherine-street, Devonport, have agreed to accept a composition of 4s. in the pound.

All claims against the estate of the late Mr. Samuel Day, druggist, Walsall, must be sent to Messrs. Deakin and Dent, solicitors, Wolverhampton, on or before the 30th April.

The creditors of John Beaton, pharmaceutist, 6, St. George's-terrace, Hampstead, have agreed to accept a composition of 2s. 6d. in the pound, payable in two instalments. Trustee, Mr. Thomas W. Marshall, linen draper, 57, St. Martin's-lane, Middlesex.

William Henry Giddings, chemist and druggist, Luton, Bedfordshire, has arranged to pay his creditors a composition of 5s. in the pound.

John Mitchell, chemist and druggist, 106, North End, Croydon, has arranged to pay a composition of 2s. 6d. in the pound.

Mr. James McCheyne will discharge all claims against the late firm of McCheyne and Henderson, chemists and druggists, Walsall, and will continue the business on his own account.

According to the *Scientific American*, it is highly probable that the present Congress will enact that the French metrical system of weights and measures shall be the only legal system in the United States at the expiration of eighteen months or two years.

A "flour of beef" is the last new article of diet. It is prepared by a process devised by Dr. Hassall, and protected by Royal Letters Patent. A pound of this concentrated meat is said to be equivalent to nearly four pounds of lean fresh meat.

The patent feeding-bottle case of Maw *v.* Mather has been dismissed by the Vice-Chancellor, Sir W. Page Wood, for want of prosecution. Mr. Mather, according to the statements of his solicitors, put in a full and complete answer to the plaintiff's application for an injunction.

According to Dr. de Boismont, who has made the subject of suicide his special study, 756 persons committed suicide in France by poison from 1827 to 1860.

GAZETTE.

BANKRUPTS.

ADAMS, WILLIAM, St. Ives, surgeon.
BOYLE, JOHN, Liverpool, dealer in drugs.
DUKE, STEPHEN, Dunchurch, surgeon.
GREAVES, JOHN, Bakewell, druggist.
HUSKISSON, J. L., late of Nottingham, chemist.
MARGETSON, P. George-street, Hanover-square, surgeon.
WILSON, B. B, Sedbergh, surgeon.

PARTNERSHIPS DISSOLVED.

ASHENHURST and FUSCH, Hunter-street, Brunswick-square, dental chair manufacturers.
BURY, H., and Co, Church-lane Chemical Works, Lancashire, manufacturing chemists.
CHADWICK, R., and Co., Kidderminster, drysalters.
HITCHCOCK, C. E, and GARRAD, C., Oxford, chemists.
JOHNSON and TINKER, Lockwood, Yorkshire, manufacturing chemists.
LANGLEY, YOUNG, and SOUTTER, Salters'-hall-court, Cannon-street, drysalters; as far as regards H. Young.
LAURIE, G., and PHILLIPS, T., Mortimer-street, Cavendish-square, surgeon dentists.
M'CHEYNE, J., and HENDERSON, A. S., Walsall, chemists.
STEPHENS and EMPSON, Liverpool, surgeons.

HOW TO DETECT THE ADULTERATION OF ARROWROOT.—To those who are familiar with microscopic research, there is no very great difficulty in discovering whether the granules of arrowroot are mixed with those of the starch of potato; but to those who are not microscopists the detection of the adulteration is not easy. The method suggested by M. Albers is, therefore, useful. To one part of the arrowroot he adds three parts of a test-liquid, which consists of two parts of hydrochloric acid of 1·120 density and one part of water. The mixture is now shaken at the ordinary temperature for about three minutes. If the arrowroot be pure it will undergo no alteration, but if it contain potato-starch this will be converted into a gelatinous substance.—*Lancet*.

PIMENTO.

As Pimento is included in the Materia Medica of the Pharmacopœia, the following particulars respecting its cultivation, given by the correspondent of the leading daily paper, may interest our readers :—

"Out of Mincing-lane and the offices of colonial brokers few English people know much about pimento. Yet it ranks third among Jamaica exports, and, next to sugar and coffee, makes the most important figure in the island cultivation. Jamaica enjoys a monopoly of this product. Every attempt to carry the seed to St. Domingo and Cuba, and to propagate it there has failed, and though the tree is found in Yucatan the fruit is not exported thence. In English households the berry is known by its familiar name of 'allspice,' here it is called 'Jamaica pepper,' but, in the language of price currents and of commerce, it is always pimento. A visit to a pimento 'walk' in the mountains, about ten miles from Kingston, enables me to see something of the mode of cultivation.

"This mountain estate comprises about 800 acres, on which, apart from its chief produce, nearly every tropical fruit and vegetable that one can mention grows in profusion. No large properties adjoin it, but close by are numerous negro settlements which enjoy the same advantages of temperate climate and fruitful soil. Oranges, limes, lemons, grape fruit, shaddocks, bread fruit, plantains, bananas, cocoa-nuts, the cabbage palm, sugar cane, coffee, with yams, cassava, arrowroot, and ground provisions in an endless variety, thrive here. The pimento-trees, which yield the staple produce, grow in hundreds. It is a white-trunked, shapely-tree, not unlike in shape and growth an English apple-tree, but with a thicker, richer foliage and dark, glistening leaves, aromatic like its fruit, and resembling those of the myrtle. It is, in fact, a tree of the myrtle tribe, The trunk is white, because every year the bark strips. Nature seems to have intended that some useful purpose should be served by the bark, but hitherto it has not been made available commercially. The tree blossoms twice, but only bears once a year; the blossom that holds and sets to the fruit appears in April. A sprig or two of the white, fragrant flower was to be seen now. It had the unmistakable 'allspice' smell, and when the whole 'walk' is in blossom, the air must be laden with rich, aromatic perfume. The berry grows to the size of a black currant, and is ready for picking about the last week in July. It must be green when picked, for if allowed to ripen it loses its aromatic properties and becomes sweet instead of spicey. After being rubbed from the stalks and dried in the sun, it becomes a rich brown, and when passed through a fanner, is bagged and ready for shipment. The term sometimes used to denote the in-gathering of the crop is not picking, but 'breaking,' because with each cluster of berries a portion of the branch is broken off, the tree thriving all the better for the spoliation. The crop is a very variable one, and sometimes fails altogether. But the tree costs nothing in cultivation, and the walk is always laid out in grass, like an English orchard. On the other hand, pimento, like sugar, has decreased much in value of late years. It used to be worth 6d., or even 1s. a pound, but at this moment fetches only 2½d to 3d. Misfortunes never come singly, and poor Jamaica has certainly had a run of ill-luck in late years.

"Before the war with Russia there was a large demand for pimento from that country for use in spiced bread; but during the blockade it was found that a tree growing on the banks of the Amoor yielded a bark which, when grated, was pungent enough to supply the pepper, and aromatic enough to yield the spice, and the Russian market was thus lost. So pimento growers, like sugar growers, despond; though, enjoying a monopoly of production, they cannot complain that they have to sustain an unfair competition with slave labour."

The London Chatham and Dover Railway Company seeks power by a bill to acquire considerable property lying between the river Thames and Ludgate-hill. Should the bill become law, the Society of Apothecaries would have to look out for new quarters.

THE CHEMIST AND DRUGGIST

LONDON, MARCH 15, 1866.

CORRESPONDENCE.—All communications should be addressed to the Editor, at 24, ROW-LANE, E.C.; those intended for publication should be accompanied by the real names and addresses of the writers.

QUERIES.—The Editor cannot undertake to attend to those which are anonymous, or to send answers through the post.

SUBSCRIPTION.—The subscription to the CHEMIST AND DRUGGIST is 5s. per annum, payable in advance. Should a receipt be required, a stamped envelope must be sent with the amount of subscription. A specimen number may be had upon application, price 6d.

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The CHEMIST AND DRUGGIST is published on the Fifteenth of every month, except when that date falls upon a Sunday, when it is published on the preceding day. It is regularly supplied direct to the Members of the Trade in Great Britain, Ireland, the Colonies, and all the principal seats of foreign commerce.

Everything inteuded for insertion in the current Month must be sent in before the 10th, except Employers' and Assistants' Advertisements, which will be received until 9 A.M. on the morning previous to publication.

GELATINE FOR BOTTLE CAPSULES.

AT the February Pharmaceutical Meeting Mr. A. F. HASELDEN read a highly-suggestive paper "On the Employment of Gelatine in place of Metal for Bottle Capsules." After reading a long extract from the article in *Temple Bar*, which we reprinted last month, Mr. HASELDEN described the experiments he had made in capping bottles with the preparation recommended by the writer of that article—namely, melted gelatine, to which a certain proportion of glycerine (about one ounce and a half to the pound) has been added, to give it pliability and toughness. The precautions to be observed in using this new capsule material are plainly set forth in the following passage from Mr. HASELDEN's paper:—

"In gelatine we have a substance which, in the matter of capping, may be turned to account in more ways than one; still there are some obstacles in the way to perfection, but only such as may be overcome. There is room left by the writer of the *Temple Bar* article for a considerable amount of practical working. It would seem, upon the first reading, that it is only requisite to melt the gelatine, colour it to taste, dip in the corks and necks of the bottles, and in a twinkling, like the tricks in a pantomime, the thing is done. Let us see what really occurs. Having melted the gelatine with as little water as necessary, and if any dirt be present having strained it, the requisite quantity of glycerine being added, and also some liquid cochineal to give a tint, the cork and neck of the bottle is dipped into it, taking care to have plenty of the material and sufficient room for the bottle; and the result is this, that, there being no slanting side-walls to the corks, the melted gelatine sticks about the cork, runs down the sides over the rim of the neck of the bottle, and gives, to say the least, a very unsightly appearance. If the cork is cut flush with the mouth of the bottle, a better thing is made; but the solution being transparent, although coloured, the top of the cork or bung shows throu has by no means a neat look. It is obvious that th defect is to be remedied by making the solution opaqu with white-lead, gamboge, dragon's-blood, or v as may be seen by bottles on the table. If the cork left long, as in most bottles containing liquids, then t walls, so as to form a perfect capsule, must be fir by tying over with membrane, leather, or paper, and dipping either into the transparent or opaque solut thus a very good substitute for a capsule can be ma as yet there is nothing to indicate any particula or maker; there is nothing to prove that the cove not been taken off and afterwards re-tied and dipp meet this want,—and it is a want, because most articles are proprietary ones,—the transparent solutio plain or coloured, must alone be used; any name, band, or trade mark may be first affixed, and t dipping should take place. Coloured leather can be e as in some of the samples. I may mention that two dippings will suffice for paper and skin, and t leather, as that substance absorbs more, but it depe the strength of the solution, and a little practice will than a whole written volume in producing expertne the opaque capsule, where a name is not material, glue will answer as well as gelatine, and at a con less cost. Amongst the various specimens whic brought, there is one with aloes, for the especial pat the insects. I think I hear some one say, How a cost? To this I am not quite prepared with an ans I do not think it could equal that of metal; somet than a shilling would pay for all the gelatine I h used, say sixty to seventy bottles. I think another How long have they been done? Many in the e of December, six or seven weeks, and these appear now as then. I must just say another word in gelatine. When the bottle is to be opened, if the been made short, it is only necessary to cut thr gelatine, which is easily done, and then remove in the usual way: no pieces will fall amongst the For bottles with long corks, and covered with a materials mentioned, cut the capsule round and r but it cannot be used again for the same or any oth and is thus, with a proper mark or label, a certain ar protection against the probability of the bottle bein with a substitute without detection; and when gelatine capsule can be cleaned with a sponge an water, thus effecting a considerable saving."

Mr. HASELDEN informs us that since the readi paper he has exposed some bottles capsuled with g the influence of a very damp atmosphere, and th capsules have become plastic they are not sticky, a quently would not cause annoyance or inconven adhering to the paper in which the bottles were supposing they were exposed to accidental moisture

THE PHARMACOPŒIA.

THE following article on the revised edition of th Pharmacopœia appears in the *Lancet* of last Saturda

"As the Medical Council have appointed thei meeting in London in the pleasant month of Ma the festive but unbusinesslike date of Whitsuntide, not inopportunely recall a resolution passed at meeting (April 15th, 1865), on the motion of S Corrigan, seconded by Dr. Andrew Wood,—

"'That it is desirable to have a proof copy of the n macopœia in the hands of the members of the Medical Council at least one month before the m

e General Medical Council, at which the opinion of the edical Council is to be given relative to its being published, order to afford to each member of Council the opportunity making such suggestions to the Committee as may appear sirable.'

"We have suggested that a copy should also be sent to e Presidents of each of the Colleges, to the Master of the pothecaries' Society, and to the Chairman of the Pharmautical Society. Our own copy will probably reach us ithout official intervention; for we can hardly expect the ouncil to take official cognizance of the critical authority hich proved so fatal to their first edition. We heartily ope that the present edition will, after revision, prove iversally acceptable; and, that there may be no doubt ont it, criticism should be courted before rather than after e printing of a full edition. It is discreditable enough to under the necessity of superseding the authority of a first lition so soon by altering the second; and hard enough on e profession, who are practically fined for the blunders of e Committee to the extent of some four thousand pounds. must be hoped that the blunder and the fine will not be peated."

THE "PHARMACEUTICAL JOURNAL" ON WEIGHTS AND MEASURES.

ROFESSOR Guibourt's remarks on English Pharmaceutical eights and Measures, which we printed last month, are scussed by our contemporary in an article entitled, "Pharaceutical Weights and Measures, from a practical point of ew." This excellent article we now bring under the tice of Chemists who do not subscribe to the *Journal*:—

"After a reference to the different systems of weights d measures that have been employed and authoritatively dered for the preparation of medicines in this country ring the last forty years, Professor Guibourt states what thinks would have been the proper remedy for the urces of error existing, while two or more systems of eights were used and sanctioned by the colleges in different parts of the country. He would either have taken e avoirdupois pound, as originally established, with its bdivisions of 16 ounces, 128 drachms, 384 scruples, and 216 grains, and have regulated both weights and measures this scale, or, what he thinks would have been preferle, he would have resolutely abolished the avoirdupois ights, and have adopted, for all purposes, a pound of 12 nces troy, or a pound of 16 ounces troy. Having thus plained what he conceives would have been the proper nedy for the evils existing when there were different stems of weights in use, those used in the preparation d dispensing of medicines differing from those used for e ordinary purposes of commerce, he proceeds to criticise e system adopted in the British Pharmacopœia of 1864. e says, 'They have adopted as the medicinal pound the oirdupois pound of 7,000 grains troy; but not being able divide this pound into ounces, drachms, and scruples ntaining exact numbers of grains, they have wished be able to suppress the three intermediate denominans, and to set up a ponderal system, composed only of pound and grains. But recoiling, doubtless, from the ctical impossibility of such an attempt, they have mitted an ounce of 437·5 grains. They have, however, ppressed, in their scale of weights (though not in that of asures), the drachm and the scruple, for a reason which ght to have caused the disappearance of the ounce likee; and that is, because it is impossible for those units to at once exact multiples of the grain and integral parts of e pound.'

'It cannot be denied that there is some ground for the ticism implied in these remarks, but we think it will rdly be admitted by those who are familiar with the stoms and requirements of Englishmen that either of the ernatives suggested for the alteration made by the authors the British Pharmacopœia would have proved a practicable nedy for the evils previously existing. Any attempt now substitute for the avoirdupois pound a pound of 12 ounces of 16 ounces troy, for the general purposes of commerce, would have proved abortive. The avoirdupois pound, with its subdivisions and multiples, are established in use throughout the whole of this kingdom, and the value of these weights are as clearly defined and well regulated by law as are the weights used in any other country. Our measures also have a simple relationship to the avoirdupois weights, and one could not properly be altered without altering the other. These weights and measures are fully applicable for all the ordinary purposes of commerce, but as the subdivisions of the avoirdupois pound do not extend below the sixteenth part of the ounce, or avoirdupois drachm, this weight is inapplicable either for dispensing medicines or for selling precious stones and other costly articles. Hence the legislature, in such cases, allows the substitution, in the one case, of apothecaries' weight, and in the other, of troy weight. If, in establishing what are now called the imperial weights in this country, the avoirdupois pound had been divided, as it appears originally to have been, into ounces, drachms, scruples, and grains, making the drachm one-eighth part of the ounce, and the scruple one-third part of the drachm, but making the grain one-twentieth part, instead of one twenty-fourth part as formerly, of the scruple, we should have had a system of weights which would have been applicable to all purposes, and would have rendered it unnecessary to sanction the use of any others. The only inconvenience attending the adoption of such an arrangement would have been that the legally recognised grain would have been slightly reduced in weight. It will be recollected by some of our readers that a proposition to adopt such a division of the avoirdupois ounce for use in medicine was made some years ago by Dr. Wilson, of Edinburgh, and this proposition was so favourably entertained at one time by the Medical Council, that they determined to adopt that system of weights in the British Pharmacopœia, but this determination was afterwards altered. It is certainly to be regretted that in the weights now ordered to be used in medicine there is not a simple relationship between the grain and ounce, and that there are no intermediate denominations of weight between those two. In prescribing, the scruple of 20 grains, and the drachm of 60 grains, are still used, and will no doubt continue to be so, and it is here that the drachm and scruple are most required. With reference to the formulæ given in the Pharmacopœia for the preparation of medicines, there are a few cases in which the adjustment of the proportions of the ingredients used might perhaps have been effected rather more conveniently if the grain had been an integral part of the ounce, and there is certainly some apparent awkwardness in the formulæ quoted by Professor Guibourt; but it must be recollected that sets of grain weights are commonly kept from 10,000 grains downwards, divided decimally, and these are easily applied in cases such as the Professor refers to.

"But not only does Professor Guibourt object to the weights used in the British Pharmacopœia, he appears still more strongly to object to our use of measures,—not of the particular measures ordered, but of any measures. He says, 'in my opinion, no instrument is comparable to a balance for determining exactly the quantity of a liquid, and I highly approve the directions of the later Prussian Pharmacopœias in not allowing the measuring of liquids.' It is well known that in France the measure-glass is hardly ever used in pharmacy. In dispensing, as well as preparing medicines, liquids are weighed and not measured. In some cases there is no doubt that greater accuracy may be attained by the use of the balance than of the measure-glass; thus, for instance, in the preparation of the diluted mineral acids, the quantities would be better adjusted by weighing than by measuring the strong acids; but for the general purposes of dispensing or mixing liquid medicines, we doubt if the French system has any advantage over that adopted in this country. The French pharmacien, in dispensing a mixture, begins by putting the bottle into a balance, and counterpoising it; then he weighs the liquids in the bottle, adding them one after the other, but he has obviously no means of withdrawing any portion from the bottle (excepting of that which is first introduced) if he happens to pour in too much. For the sort of medicines usually prescribed in France this method of dispensing may probably do very well, but in this country we do not think it would conduce to accuracy, or be at all compatible with the dispatch of business required at our dispensing establishments."

THE CATTLE DISEASE—DISINFECTING MEASURES.

The following recommendations have been drawn up by the Royal Commission on the Cattle Plague, and circulated to the local authorities throughout the country :—

"1. The Cleansing of Sheds, infected or otherwise ; of Markets, Slaughter-houses, Lairs, etc.—Wash the woodwork of the sheds everywhere with boiling water, containing in each gallon a wineglassful of carbolic acid.* Then lime-wash the walls and roof of the shed with good, freshly-burnt lime, adding to each pailful of whitewash one pint of carbolic acid. Sprinkle the floors, after well cleaning with water, with undiluted carbolic acid. Lastly, close all the doors and openings, and burn sulphur in the shed, taking care that neither men nor cattle remain in the shed while the burning is going on. Allow the shed to remain closed for at least two hours, then open doors and windows. About 1 lb. of sulphur is sufficient for a 10 or 12-stall shed. The sulphur should be burnt in the centre of the shed, so as to get the fumes diffused everywhere. It may be placed on a shovel of burning coals. This process should not only be used in sheds where infected cattle have been kept, but also where there is any reason to apprehend the presence of infectious matter on the premises. When disease is in the neighbourhood it may be usefully employed once a fortnight. In cleansing sheds from which the cattle cannot be removed, sulphur must not be used. In such a case, follow the above instructions, omitting only the fumigation with sulphur. All markets, slaughter-houses, lairs, and places where cattle have been customarily collected, should be carefully and thoroughly disinfected in the above manner before they are used again, the manure, blood, and offal being treated as directed in sections 3 and 4.

"2. The Cleansing of Waggons, Trucks, etc.—Well scrape the boards of the truck or waggon, and burn the scrapings. Then wash everywhere with boiling water, adding some washing soda. Then wash again with chloride of lime or carbolic solution.

"3. Disposal of Manure or Litter.—The most effectual way of disposing of manure is to burn or bury it; but if neither plan can be adopted it must be ploughed in. Before burying or ploughing it in, water it well every day for a few weeks with the carbolic solution by means of a watering-pot or hose. When the disinfectant has well penetrated remove the heap to some neighbouring arable land, and immediately plough it deeply in; care being taken that the whole of it is buried. If there is no arable land available, place the manure, after the above treatment with carbolic acid, in a heap in a field, and consolidate by the passage of carts over it. After a final watering with carbolic acid, cover it with at least one foot of earth. If the heap has to be packed over, previous to being applied to the land, water it once more with carbolic acid, and cover it again with earth. Carefully cleanse and disinfect by sponging with the carbolic solution all carts and tools used in moving the manure, and the boots of the men, as well as the feet and legs of the horses. After the manure has been removed from the premises, thoroughly disinfect the yards by the method given in section 1. Add carbolic acid to the liquid manure in tanks, in the proportion of one pint daily to every hundred gallons.

"4. Disposal of Carcasses of Infected Animals.—Bury the carcass 6 ft. deep ; cover it well with good quicklime, mixed with carbolic acid in the proportion of half a gallon to each hundredweight.†

"5. The Disposal of Blood, Offal, and Hides of apparently Healthy Cattle which have been killed after being in c with Infected Cattle.—Carefully collect all blood and mix with a little carbolic acid, and then bury. Hid horns may be disinfected either by washing in a solu carbolic acid, or by soaking in a solution of chlor lime. It is considered advisable by importers of hi first remove the moisture by covering them for twelve with common salt before they are soaked in the abov tions.

"6. Precautions to be taken by Butchers, Inspector others, who visit Farms for the purpose of seeing or Diseased Beasts.—The greatest care as to cleanliness is sary in the case of butchers and others who go to fa kill or see infected animals. They should never g healthy beasts in their infected clothes. They should carefully, and dip their boots in the carbolic solutio should thoroughly brush their clothes, sprinkle or them with the same solution, and expose them to th In addition to these precautions, inspectors will follo directions already issued to them. All persons wh been in contact with or near to diseased animals mu use similar precautions. All cloths and baskets us meat should be steamed or plunged into boiling wate being used.

"7. Further Disinfecting Measures which may b in Infected or Endangered Farms.—Wash the cat over with a solution of 1 lb. of soft soap, a wineglas carbolic acid, and a gallon of warm water. This shou only be done when cattle have been near infected sto also when disease is in the neighbourhood. In the case it may advantageously be done once a week. paint brush, with bristles about three inches long, and dipped it into the undiluted carbolic acid, well sprinl liquid over the floors of the cattle sheds, the lowe of the walls, and the droppings of the animals ever Be very particular to have the farm buildings always s of carbolic acid, especially those sheds containing sick No care need be taken to prevent the cattle licki carbolic acid, as it is likely to do good rather than All clothing, baskets, cloths, tools, and utensils descriptiou may readily be disinfected by exposing to the action of burning sulphur in a close shed undergoing fumigation as directed in section 1. I especially be borne in mind that disinfectants are o use where cleanliness is not observed. The forme never be considered a substitute for the latter."

* Wherever carbolic acid is mentioned it must be understood that either this or cresylic acid may be used indiscriminately. These two agents are derived from coal tar, and have the greatest similarity to each other. Of the two, carbolic acid is better known, and is in general easier obtained; but cresylic acid appears to possess slightly more antiseptic properties, and is at present cheaper. The commoner kinds of commercial "carbolic acid" consist, almost entirely, of cresylic acid. If carbolic or cresylic acid cannot be obtained, chloride of lime must be used, in the proportion of one pound to a pailful of water. Where chloride of lime is used, neither carbolic acid nor fumigation with sulphur can be employed with advantage; and the former disinfectant, although very valuable where the two latter cannot be used, is decidedly inferior to the combination of carbolic acid and sulphurous fumigation.

† Owing to its antiseptic properties, the addition of carbolic acid to the lime is strongly urged in all cases where it is suspected that putrefaction has commenced.

THE SEWAGE QUESTION.*

What are we to do with our sewage? The question pressible. It haunts us on all sides, and demands, i which we cannot resist, a solution of some kind or Parliament, with all the pressure upon its time whi exciting period brings, with all its Reform Bills, Plagues, and Fenian riots, must entertain it; and ev busy session cannot pass without some effort bein towards a settlement of the difficulty.

The fact must be frankly admitted, that the diffi a very serious one. No scheme for the disposal of the could be adopted, or even satisfactorily tried, with expenditure of an enormous sum of money, and the quences which would attend the failure of any such must be disastrous. Moreover, in spite of the carefu tigation which the subject has received during the years, we cannot, as yet, by any means flatter oursel we know enough of the problems involved to make th tion of one out of the many proposed schemes a v undertaking. And yet such a selection must be long, for the existing system is fast rising into a which will be absolutely unbearable, and every on that we can only hope to arrive at the true mode of our sewage and keeping our rivers pure by a resol courageous trial of some one plan.

Now, there is one fundamental error which lies at of half the perplexity which has beset this question. sists in the notion, which is very widely spread, not universal, that it is necessary to make a profi sewage. Of course, no one in his senses would den

* Extracted from *The Reader* of March .

is extremely desirable to do so if possible; but to put ofit in the first place, to convert the question into a merely onetary one, is to overlook the primary necessity of a sub-antial sanitary reform. The real problem to be solved ight be stated in a very simple form. We must, in the st place, dispose of the sewage of our towns in such a nner that our rivers shall become pure and the public alth remain unaffected. When we have agreed upon this the first and essential condition, and not till then, we ve a right to do our utmost to effect the alteration in the st economical way. From the very first we must bear in nd that, in spite of our best efforts, the result may be oss instead of a gain. In that case we must bear it con-ntedly, satisfied to pay our quota for the enjoyment of a eat blessing, just as we now pay it for the scavengers who an our streets and the police who guard them. We are, wever, far from anticipating such a necessity. On the ntrary, we think there is rational ground for hoping that, ilfully employed, the sewage may become a source of tional revenue, or at any rate may occasion no sensible s to the ratepayers.

One great element of success we have been gaining rapidly ring the last few years—namely, a scientific and practical owledge of the subject. The splendid generalizations of ebig, erroneous as they have in some few instances proved, inted out the lines which research should take, and those cs have been followed patiently and carefully by English perimentalists. The result has been, that a mass of facts of e highest value for future application has been collected. me of these have contradicted the anticipations of Liebig; t while wishing to avoid his few errors, we should be alike grateful and unjust if we denied his title to rank as the st and greatest of the pioneers in this branch of economics. the 5th January, 1857, a Commission was appointed to nquire into the best mode of distributing the sewage of wns, and applying it to beneficial and profitable uses." is Commission worked with the utmost assiduity for eight ars, and the third report, dated March, 1865, comprises arly all that is known on the subject. A committee of their mber, consisting of Mr. J. B. Lawes and Professor Way, perintended for three years the application of the sewage Rugby to land taken for the purpose, and, from an amazing mber of experiments and analyses, have deduced some ghly practical and useful suggestions. We will take this portunity of drawing attention to some of the points which em to have been established by these and other researches. The first point relates to the value of the sewage. There n be no question that this value has been greatly overrated the earlier writers upon it. One scheme for the disposi-n of the London sewage, which was very strongly pressed on the Metropolitan Board of Works, proposed to sell the wage to farmers at twopence per ton. Now, the average lue of the materials in a ton of London sewage is not more, cording to the Rugby reporters, than one penny, and they stly urge that farmers would hardly be likely to give even e-half of this sum for a manure, the use of which would tail so much trouble upon them. Here, then, at the very tset, is a death-blow to most of the wild schemes which ve grown out of the question, and which, not contented th promising magnificent dividends to their supporters, ve generally offered equally magnificent payment to the epayers.

Another point which has been abundantly made out by e woful experience of experimenters, as well as by scien-ic reasoning, is that sewage can only be economically plied in one way—in its natural fluid condition. All empts to manufacture solid or portable manure from it ve failed and must fail, for the simple reason that the monia, which constitutes three-fourths of the valuable rtion of sewage, is, as every chemist knows, not only latile, but extremely soluble in water, even when in com-nation. Hence any solid substance precipitated from the wage is certain to contain next to none of this important mpound. We are driven by this consideration to the mission that it is only by a system of irrigation that any nefit can possibly be obtained from the sewage. This rrows the inquiry very considerably.

The next question which suggests itself is one of extreme portance, and one which cannot, as yet, be answered with y great precision. It is the question of dilution. What the average dilution of the sewage? or, in other words, how much water must we add to the land for every pound of useful manure? The answer, as far as London sewage is concerned, is given approximately by Messrs. Lawes and Way. It would appear, from their calculations, that for every head of the population of London 100 tons of sewage (including rainfall and subsoil water) are poured into the river every year. The dilution is, of course, less in dry weather, but it is obviously necessary to deal with the average. Taking the value of this sewage at one penny per ton, the manurial value contributed by each individual of the population may be said to be 8s. 4d. per annum.* At this point it is that the great difficulty of the whole question presents itself. It becomes clear that, unless the expensive system of storage be adopted, the crops, whatever they may be, that are destined to receive the sewage, must be irrigated with it incessantly the whole year round, and, what is even more inconvenient, must receive by far the greatest quantity of it in the winter, and in wet weather, when they want it least. Here is a further limitation of the inquiry. The only crops which could stand so incessant a deluge are grass crops; and the Committee of the Sewage Commission therefore limited themselves, very wisely, to the study of the effects of an incessant application of the sewage of Rugby to grass land. Their results are in the highest degree interesting, but we can do no more than quote a few of the most striking, referring our readers for further information to the report we have already mentioned.

Two fields were divided into four portions each. In each field one of these portions was left unsewaged. One was treated with 3,000 tons of sewage per annum, one with 6,000, and the last with 9,000 tons. On comparing the average yield in three years, it was found that—

1. The unsewaged portion gave 3 tons of hay per acre per annum.
2. The 3,000 ton portion yielded 5 tons of hay.
3. The 6,000 ton portion, $5\frac{3}{4}$ tons.
4. The 9,000 ton portion, $6\frac{1}{2}$ tons.

It will be seen that the return per ton of sewage is greater when comparatively small amounts are used. The expense of distribution is, however, increased in a like proportion, and the reporters believe that the employment of 5,000 tons per acre per annum will, in most cases, give the best results. It seems to us that this last point is open to some doubt. We can hardly see that it is yet demonstrated that the application of a smaller quantity might not result in financial, as it certainly would in sanitary, advantage. It is doubtful whether it would ever be possible to effect a thorough purification of the sewage water if it were applied to the land in such enormous quantities.

The grass obtained in the experiments was devoted to the fattening of cattle and to the production of milk. For the former purpose it is unsuited, except when associated with oil-cake, but with milking cows the result was highly satisfactory. It appears clearly proved that with 5,000 tons of sewage "an average gross return of from £30 to £35 per acre in milk, at 8d. per gallon, may be anticipated."

With data so valuable in our possession, action in some form or other ought surely to be taken before long. It has been wise, no doubt, to refrain from binding the country to a system, whilst the preliminary experiments were pending; but may we not now hope that the period for a more comprehensive experiment has well-nigh arrived? Without wishing to dogmatize upon so difficult a subject, we will venture upon one remark, which, in the present state of our knowledge, seems to us to be incontrovertible. Except under very peculiar circumstances, it is unlikely that the utilization of the sewage of towns can be profitably effected by private enterprise. More than this, it appears to us undesirable that it should be effected in such a manner, even if it were possible; for those to whom the undertaking is committed should, as we have before said, have for their first object the attainment of a thorough sanitary reform. We could hardly expect this to be the primary motive with a body of directors, goaded incessantly by the thought of an approaching dividend meeting.

There is but one available alternative, and this alternative might be adopted without ultimate hardship to the ratepayers. Let the Government force the onus of the task upon

* Recent experiments by Professor Way and Dr. Odling give, as the average contribution of each individual per annum, a somewhat smaller sum, namely, 7s. per head.

the local boards in the case of country towns, and upon the Metropolitan Board of Works in the case of London, investing them with compulsory powers for the purchase, if necessary, of the requisite land. In some cases such a purchase would be unnecessary, for it would be possible to find farmers willing to contract for the sewage; but in others it would doubtless devolve upon the boards to do the work themselves. As to the local boards, let them have all reasonable latitude of time. Let them, if necessary, be assisted with temporary Government aid. Teach them and direct them. Show them the best way of reimbursing themselves for their initial expense by the judicious management of the lands which receive the manure; but still force them to act, and exercise a constant and vigilant supervision upon them to see that they do so efficiently. This supervision might, perhaps, be safely entrusted to the Metropolitan Board of Works, who would of necessity be in possession of the best information upon the subject, and whose operations are so immediately under the public eye, and the control of Parliament, that flagrant abuse would be next to impossible. Individual hardship and difficulty would, of course, arise, especially in those cases where it was necessary to have recourse to pumping for the distribution of the sewage. Such cases must be examined patiently, and dealt with in a fair and liberal spirit.

We cannot but believe that the plan here indicated is more likely to succeed than any of the private schemes which have hitherto been advanced. Some of these are, indeed, so wild, that we will adopt for each one of them the words Baron Liebig applied to the most notorious of the class—the scheme of Messrs. Napier and Hope—"The carrying out of this scheme would not only be a squandering of an enormous amount of money, but before long would also be looked on as a national calamity."

"HOW TO MAKE GREEN TEA."

Many of our readers have doubtless seen an advertisement bearing the above heading, and have rightly guessed the "chemical toy" to which it refers, to be a family connection of the lately famous "Serpent de Pharaon." These relations—of all degrees of consanguinity—have indeed multiplied to an extent which it is to be hoped, will, by nauseating the public with really dangerous bagatelles, soon become its own remedy. The "Green Tea" is, however, perhaps as pretty and comparatively harmless an example of chemical decomposition as can well be introduced into the family circle.

To make "Green Tea" you gently heat, on a bit of tin-plate over the flame of a candle or spirit lamp, a few orange coloured crystals, when suddenly, and with slight decrepitation, the crystals are converted into a mass of green fragments, which really do simulate with wonderful closeness the shrivelled leaves of tea.

The orange crystals are those of the *acid chromate of ammonium* $(NH_4)_2\ O,\ 2\ Cr_2\ O_3$, which is well known to give, when heated, the green sesquioxide of chromium. Even the marked resemblance to tea leaves has been long since noticed by Böttger. (*Vide Watts' Dict., art. Sesquioxide of Chromium.*)

Although the acid chromate of ammonium may be obtained in commerce at a much cheaper rate than it can be made on the small scale, some of our readers may possibly like to prepare it for themselves. To do this, take any given quantity of chromic acid, and, having divided it into two parts, saturate one exactly with ammonia, and then add the other. Now allow the solution to evaporate without heat under a bell-jar over sulphuric acid. The crystals formed are of a deep orange colour—not, however, so dark as those of potassic bichromate—and are very soluble in water. They are not deliquescent. Chromic acid itself may easily be made by the process of Warington, that is, by mixing with 100 volumes of a cold saturated solution of bichromate of potassium, 150 volumes of concentrated sulphuric acid. The mixture is allowed to cool, and the deposited crystals having been drained from the mother liquor, are dried as much as possible on a porous tile under a bell-jar. They must not of course be allowed to come in contact with organic matter.

It is perhaps scarcely necessary to observe that the mate of ammonium is exceedingly poisonous, and should be taken to prevent the ingress of youn in this immature state into the domestic teapot.

H. N. Dr

REVIEWS.

FAIRY TALES OF SCIENCE.

The Fairy Tales of Science. A Book for Youth. By Cargill Brough. Second Edition. Pp. 322. London: Griffith and Farran, 1866. Price 5s.

If a book be sufficiently interesting to beguile th hours which must be passed in travelling per "limite it cannot, at least, be dull or tiresome; nor, indeed, very abstruse. The bumping and noise which learned to accept as irremediable accessories to railw motion are not favourable to mental abstraction, doubt very much if an accurate notion of even the of the unitary system of chemical notation could be while dashing along at fifty miles an hour, and to such incidental interruptions as tunnels of three duration.

It was precisely under these circumstances that cut the pages of Mr. John Brough's charming litt and, although it be slight praise to say of a work ha scientific pretensions that it is as interesting as we are in a position to recommend *Fairy Tales of Sci* valuable addition to the railway library.

Mr. Brough's aim in writing the book is so clearl in his preface to the first edition, that we cannot d than give our readers his own words, "To plac the youthful student a compact and concise comp of the leading and most universally important l of science, has been my principal object in the prepa this little volume. To adapt the work to the cap all, I have endeavoured to divest the different treated in it of dry and hard technicalities, and t them in the more attractive garb of fairy tales—a no means easy."

While we can readily appreciate the difficulty of we are bound to say that Mr. Brough has most suc performed it. The book is divided into chapters, each to a distinct branch of science, which is woven into of a fairy tale. Thus, in "The Age of Monsters," pleasantly made acquainted with the grim Saurian extinct fauna; in the "Amber Spirit," the wo electricity, from the first dawn of its existence u mind of the philosopher of Miletus, down to Whe telegraph and the electric clock, are revealed to us of course quite unnecessary to explain what are the of the chapters headed "The Four Elements," "Th of the Sunbeam," "Wonderful Plants," and "Plute dom;" but we may as well say that in the one, "Modern Alchemy," we are shown how, as scie gresses, the transmutation of metals becomes less improbable, and that the extraction of aluminium fr the production of ultramarine from silica and sulphu rosaniline and its congeners from coal-tar, are feat more surprising than any attributed to the ancient while the remarkable phenomena of allotropy and dim are still wonderful and unexplained. An admirabl of the chief chemical phenomena of light is given chapter on "The Magic of the Sunbeam," and tha "Two Eyes are better than One," is, of course, to the principles which led to the construction of th scope. "The Life of an Atom" is a chapter so int so playful, and, at the same time, so strictly true to f we should like, if space permitted, to quote a few We prefer, however, referring our readers to the boo

Mr. Brough has modestly designed his *Fairy* youthful readers, but we are sure that while it a pleasant companion to those who are about to e flowery paths of the hill of science, very much of it read with interest by those who, toiling up the mor passes which approach the summit, at times turn ro resting, no longer "gaze and wonder," but "con and enjoy."

It would be simple injustice not to mention the very clever ustrations with which Mr. C. H. Bennett, giving full rein his fancy, has embellished the book. One, in particular, ich faces the chapter on "Modern Alchemy," is replete th humour, and all are in harmony with the spirit of e book itself.

H. N. D.

DOMESTIC MEDICINES.

mestic Medicines: their Uses and Doses in the Absence of Professional Assistance, with Tables of Weights and Measures, the Preparation of Beverages suitable for the Sick Room, Poisons and their Antidotes. By A. F. Haselden. Second Edition. Hardwicke. Pp. 64. Price 1s.

is handy little book is an excellent guide to domestic dical practice. It explains the action, use, and dose of ery medicine that is required in the treatment of common ments; it describes the means to be adopted to counteract e effects of the common poisons; and it gives full directions r the preparation of cooling beverages, arrowroot, beef-tea, c. It is a book that chemists may safely recommend to eir customers.

MAW'S ILLUSTRATED CATALOGUE.

E Illustrated Catalogue of surgical instruments, shop tings, and sundries lately issued by Messrs. Maw and Son, most tastefully got up, and forms a valuable addition the chemist and druggist's library of referenee.

MR. WADE AND THE PHARMACEUTICAL SOCIETY.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

Sir,—As the wildest rumours generally have some founda- n in truth, and are frequently taken for more than they e worth, I think it desirable to point out how much and w little truth there is in a statement concerning Mr. Wade d myself which appeared in Mr. Anderson's contribution your last month's correspondence.

The statement made is that I visited Mr. Wade privately, d told him that if he would "carry over the Society he ould be dubbed a knight of the Council." The truth is, at at a time when there was some bitterness between the o Societies, I used my efforts to promote a better feeling d a more just appreciation by either society of the merits the other.

Among other things which I did with this view, I called on Mr. Wade and discussed the grievances which were id at the door of the Pharmaceutical Society.

He expressed a desire to see some real or imaginary abuses formed. Failing to convince him that the Council of the harmaceutical Society might justly and honourably object some of the changes he thought desirable, I suggested to m the propriety of his becoming a member of the Pharma- utical Society that he might have the right of attending eir meetings and advocating the claims of the outsiders; ding as a further inducement towards doing so, that if he ssed his examination and took up his membership, I would minate him for the Council. I could not promise him more an a nomination and my own vote, for I have on principle frained from asking votes either on my own account or on half of my friends. This suggestion was naturally made ivately, for it was a point with which the public had no ncern, but as Mr. Anderson has given publicity to,—I will t say a wilful misrepresentation of what took place, I think desirable to give publicity also to a correct statement of the romise which I made, and which I now repeat, that if Mr. Vade will pass his examination, and take up his member- hip, I will with pleasure nominate him for the Council and ive him my vote.

Barnard S. Proctor.

11, Grey-street, Newcastle. March 5, 1866.

[We have received a letter from Mr. Wade, denying that e made any such statement at the Annual Meeting as that nputed to him by Mr. Anderson.—Ed. C. and D.]

HOURS OF BUSINESS—THE NIGHT BELL.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

Dear Sir,—I do not see why we chemists should be obliged to keep open so many hours as most of us do. Ten, or at most twelve hours daily, is surely quite long enough for us to be confined in any shop. I am convinced we should do quite as much business in fewer hours as we do now. It is our own fault that the public think we are obliged to serve them at any time they come for any trifling thing they may want. I have been frequently called up for a pennyworth of castor-oil or sweet nitre, but seldom for anything really necessary. In fact, so unreasonable have the public in my district become, that I now refuse to get up at any time, or allow my assistant to do so, knock they ever so loudly, as I do not see why we should risk a severe cold for the sake of a late penny customer. I could mention the names of three other chemists in the town who decline answering the bell at night, through the vexatious trifles they have been called up for. Now let me propose a remedy for this state of affairs, *should a real case of necessity occur.* It is an understood thing for surgeons to charge for night attendance, and why not chemists? Say we open at eight or nine o'clock in the morning, and close at seven or eight in the evening; let us charge, say one shilling for attendance, besides the medicine required, after shutting-up time until ten o'clock, and half-a-crown afterwards for night attendance, besides the cost of the medicines, or perhaps leeches, required. No reasonable person would refuse to pay us for our trouble if it was an understood thing. Could we not get a clause inserted in our new Bill? I believe we could. I think it is our own fault that the—may I not say profession?—has sunk so low as it has in the estimation of the public. Many a chemist, like Shakspeare's apothecary, has said to himself, "My poverty, but not my will consents," and has lowered himself and his calling by serving anything and everything at reasonable and unreasonable hours.

I write this letter, thinking we ought to come to an understanding amongst ourselves. And my fellow chemists in this district, to whom I have mentioned my idea, coincide with me as to the necessity of adopting some such course as I have suggested.

I am, dear sir, yours, very respectfully,

R. H. Lowe,
Local Hon. Sec. U.S.C.D.

Wolverhampton, March 9, 1866.

BAKING POWDERS.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

Sir,—There is a description of dishonesty in trade more subtle and more difficult to bring home to the crafty dealer, than the more palpable wrong of selling adulterated articles; I allude to the practice of puffing off certain compounds as containing qualities which they do not possess; this is particularly the case with respect to "baking powders." From the advertisements put forward concerning them, it might be supposed that they could adequately supply the place of butter and eggs in our pastry and puddings, and that a great saving would be the result of their employment for those purposes. This idea is altogether delusive, and it is quiet right that the true value of the commodity as a dietetic agent should be properly estimated by the public.

About two years ago the result of a chemical analysis of these powders was published in *The Lancet*. It was ascertained that they are for the most part composed of carbonate of soda and tartaric acid, combined with a small proportion of rice flour; this is the description of the powders when unadulterated and in the least objectionable form.

Now it cannot be denied that such a compound may be used with advantage in the preparation of pastry, *in addition to the ordinary ingredients*; for the chemical effect of the powder referred to would be to render pastry more light and digestible, by neutralizing the tendency of the butter to turn rancid under the action of heat, to which it is subjected during the process of baking; but such powders cannot effect a saving of butter by being substituted for it, nor can "egg-powders" supply the place of eggs in children's puddings; for besides the absence of any nutritious element whatever in these powders, rendering their employment objectionable, they are frequently positively pernicious, from

the fact that the colouring matter found in them is supplied by the introduction of *chromate of lead*.

Whether "baking powders" can with advantage be employed in the place of yeast in the making of bread, I am not prepared to say; but as *German yeast* is used in the Queen's bakeries, and no other preparation of the kind is authorised in the Royal household, the statement put forward in some of the advertisements relating to the baking powder, to the effect that it is "recommended by the Queen's baker," is intended to imply more than the facts justify.

But my remarks have chiefly to do with the part these "pudding and egg powders" play in the daily food of little children. It is a matter of more consequence than may appear at first sight; obscure cases of illness sometimes arise, especially in the attacks of infancy, and some important light may be thrown upon such cases by inquiring into the nature of the food partaken of; and with these powders in view, a different meaning than heretofore may attach to an inquiry of the kind.

The consideration which was prominent in my mind in addressing you was this,—that although these baking powders may be quite innocuous in themselves—perfectly free from an admixture of anything which could bring them under the charge of being adulterated—still a great wrong may be inflicted upon the public by the pretence that these compounds possess qualities which they do not contain, and although they may be used with advantage in the manner which I have indicated, yet abuses in their employment must be guarded against, for to depend upon such an ingredient, as containing the nutriment necessary for children and invalids, to the exclusion of the proper elements from their daily food, would lead to the most disastrous results, all the more serious because the true cause of the ailments incurred might remain altogether unsuspected.

I am, Sir, yours obediently,

SANITAS.

February 20, 1866.

THE MEDICAL COUNCIL.—The Parliament of Medicine is summoned to meet in London on the 15th of May, and will probably sit through Whitsun week. The Medical Council is a highly-paid deliberative body, respecting the Colleges of England, Scotland, and Ireland. Each member receives ten guineas a day during the session. Its deliberations have generally lasted a week, and cost over £1,500 pounds in fees. Fortunately for the fund which has to provide the fees (they are drawn from the pockets of the medical profession), most of the members are in lucrative practice and lose by the arrangement; otherwise speeches costing some twenty-five pounds an hour might be unduly prolonged, and would be open to even more severe criticism than they now receive. There is one service which the Medical Council might render which would be as welcome to the public generally as to the doctors. They would confer a great benefit if they could persuade the Government to introduce such an amendment of the 40th clause of the Medical Act as should really prevent unlawful practice by medical pretenders, and enable all men readily to distinguish between legal and illegal practitioners. This the Medical Act now professes, but fails to do.—*Pall Mall Gazette*.

INTERNATIONAL EXHIBITION OF FISH AND WATER PRODUCTS IN FRANCE.—The French Government have organized an Exhibition illustrative of this, under the presidency of the Minister of Marine and the Colonies, to be held at Arcachon, a seaport near Bordeaux, in July next. They invite from the seaports of their own country, and the fishing ports of their maritime neighbours, contributions to the Exhibition. These are variously classed, and comprehend specimens of cured and preserved fish for food; oil for use as medicine; chemical products extracted from seaweed; shell, amber, pearl, colouring matter, etc., in connexion with art; industrial products, such as, oils, skin, whalebone, sponges, etc.; marine manures, shell sand, and seaweed. Another class includes tools and machines for making boats, models of fishing boats, of oyster-beds, and of salmon ladders; lines, nets, and fishing apparatus, and oyster dredges. Then there are instruments for preserving and smoking fish, with plans and models of curing establishments, and descriptions of modes of packing and transporting fish. There will be collections also of memoirs on the subject of fish and fish culture and management, with plans, charts, drawing, and photograp these prizes will be awarded according to their r merits, and the cost of transporting the articles for e will be borne, either altogether or in part, by the ad tion of the Exhibition.

NEW ANÆSTHETIC AGENT "CHLOROCARBON."—Si Y. Simpson has lately employed the vapour of bi of carbon as an anæsthetic agent with excellent In its chemical constitution the bichloride of c analagous to chloroform; with this difference t single atom of hydrogen existing in chloroform is rep an atom of chlorine in the bichloride of carbon, or ' carbon" as Sir James proposes to call it. The chemical constitution of the two bodies may be pressed in formulæ corresponding to the atomic weigh in the British Pharmacopœia:

Chloroform = C_2HCl_3.
Chlorocarbon = C_2Cl_4.

The chlorocarbon can be made from chloroform action of chlorine upon that liquid; and Geuther ha that the process may be also reversed, and chlorof duced from chlorocarbon, by treating it in an ap vessel with zinc and dilute sulphuric acid, and thus it to the action of nascent hydrogen. The most way hitherto adopted of forming bichloride of carbon in passing the vapour of bisulphide of carbon toget chlorine through a red-hot tube either made of por containing within it fragments of porcelain. Ther from this process chloride of sulphur and bichloride bon, the latter being easily separated from the forme action of potash.

The bichloride of carbon, or chlorocarbon, is a tran colourless fluid having an ethereal and sweetish od unlike chloroform. Its specific gravity is great, b high as 1·56, whilst chloroform is 1·49. It boils Fanrenheit, the boiling-point of chloroform being 141

Besides trying the anæsthetic effects of bichlorid bon upon himself and others, Sir James has used it or two cases of midwifery and surgery. Its primar are very analogous to those of chloroform, but it longer time to produce the same degree of anæsth generally a longer time to recover from it. Some ments with it upon mice and rabbits have shown t corresponding animals in these experiments being sin ously exposed, under exactly similar circumstance same doses of chloroform and chlorocarbon. But the ing influence of chlorocarbon upon the heart is grea that of chloroform; and, consequently, Sir James be to be far more dangerous to employ as a general an agent.

TRADE REPORT.

THE business in Chemicals slightly improved after a fair business being done both for export and home latterly the market has again become dull, which i attributed to the unsettled state of political and n affairs. The Bank directors reduced the discount t cent., but while such uncertainty exists on th Exchange, we cannot look for any permanent impro Tartaric Acid closed dull at 1s. 5¾d. spot, and 1s. 6d. There is a fair business doing in Citric Acid at Oxalic Acid remains quiet at 12¼d. Chlorate is demand at 14½d. to 15d. Sal Acetos is steady Bichromate continues dull at 6d. Prussiate of Potas quiet at 13¼d. A good business has been done in 7¾d. to 7¼d., closing at 7¾d. to 8d., and very few b the former, and sellers at the latter prices. Quinin and rather cheaper. French is now 4s. 11d. sell English 5s. 3d. A large business done in Soda Ash from about 3s. 0½d. Crystals are also higher, spot £7, Caustic Soda is quiet at 19s. to 20s. for 60 per cent., to 25s. for 72 per cent., and Bicarbonate of Soda steady Sulphate of Copper continues dull, and the price dropped to 28s. 6d. and 29s. Cream Tartar remains 100s. to 102s. 6d. Sal Ammoniac in moderate de

6d. and 37s. 6d. A good business is doing in Flour of mstone at 12s. 6d. to 13s., and now 13s. asked. Roll is dy at 10s. 6d. to 11s. Muriate of Potass, remains dull at 9d. to 9s. Ashes are rather scarce and little doing. roleum has declined to 1s. 11d. and 2s., and quiet. Turtine is much better, last sales moderate, 46s. for French. sced Oil is much better, spot 40s. 6d., and April to June, per cwt.

n the Drug Market a moderate business has been done at prices. The public sales of Bark have been moderate, and ood part was sold at steady prices. Castor Oil has anced ¼d. per lb. for the medium quantities. Oil Aniseed ain dull at 9s. 6d., and only small sales thereat. Oil sia steady at 8s. 5d. Some parcels of Citronelle to be at 4d. to 5¼d. according to quality. A good business been done in China Rhubarb, and prices have advanced it 6d. to 1s. per lb. All descriptions of Turkey and t India Gum Arabic have met with an improved demand, prices are dearer. Assafœtida is 10s. to 15s. higher. A e business has been done in Camphor, and prices are h higher. Japan for awhile sold at 130s., and China on spot 127s. 6d. to 130s. Ipecacuanha is also much dearer, sales made at 10s. 6d. to 11s., now 12s. asked. Turkey um sells more readily at 14s. to 14s. 6d. Cape Aloes are er easier. Musk is rather cheaper. Cubebs steady, last s made at 87s. to 89s. Cardamoms are steady. Sarsapano change. China Galls have advanced to 69s. and 70s. key Galls are rather easier. Turmeric more in demand, about 1s. dearer. Gamboge is again dearer, Saltpetre ore in demand, and fully 1s. higher. Cod Liver Oil is t at 4s. 6d. to 6s. 6d. In other goods no change.

PRICE CURRENT.

ese quotations are the latest for ACTUAL SALES *in Mincing e. It will be necessary for our retail subscribers to bear in l that they cannot, as a rule, purchase at the prices quoted, nuch as these are the* CASH PRICES IN BULK. *They will, however be able to form a tolerably correct idea of what they ought to pay.*

	1866.		1866.		1865.		1865.	
	s.	d.	s.	d.	s.	d.	s.	d.
OL, Cape, per cwt.	75	0 ..	92	6	75	0 ..	97	6
nch	58	0 ..	83	0	60	0 ..	85	0
orto, red	40	0 ..	43	0	45	0 ..	47	0
ily	72	6 ..	75	0	72	6 ..	75	0
ples, white	68	0 ..	75	0	68	0 ..	76	0
renco, white	90	0 ..	95	0	85	0 ..	90	0
red	80	0 ..	85	0	80	0 ..	85	0
ogna, white	90	0 ..	95	0	90	0 ..	95	0
OWROOT..(duty 4½ per cwt.)								
rmuda..per lb.	1	3 ..	1	6	1	6 ..	1	8
Vincent	0	2½ ..	0	6	0	3½ ..	0	6
naica	0	3 ..	0	5	0	4 ..	0	7¼
er West India	0	2¼ ..	0	3½	0	3 ..	0	4½
zil	0	2¼ ..	0	3	0	2½ ..	0	3
t India	0	2¼ ..	0	3½	0	3 ..	0	5
al	0	4 ..	0	7¼	0	4½ ..	0	8
rra Leone	0	3½ ..	0	4	0	4½ ..	0	5
ES....per cwt.								
t, Canada, 1st sort	35	0 ..	0	0	31	6 ..	0	0
rl, ditto, 1st sort	38	6 ..	0	0	32	6 ..	0	0
MSTONE,								
gh....per ton	155	0 ..	165	0	155	0 ..	0	0
	215	0 ..	220	0	195	0 ..	210	0
r	260	0 ..	265	0	240	0 ..	250	0
MICALS,								
d—Acetic, per lb.	0	4 ..	0	0	0	4 ..	0	0
Citric	2	0½ ..	2	1	1	10 ..	1	11½
Nitric	0	5 ..	0	5½	0	5 ..	0	5½
Oxalic	1	0½ ..	0	0	0	9½ ..	0	9¾
Sulphuric	0	0½ ..	0	1	0	0½ ..	0	1
Tartaric crystal	1	5½ ..	1	6	1	6½ ..	1	7
powdered	1	6½ ..	0	0	1	7 ..	0	0
m .....per ton	150	0 ..	155	0	125	0 ..	130	0
powder	170	0 ..	175	0	145	0 ..	150	0
monia, Carbonate, per lb.	0	5¼ ..	0	5½	0	5 ..	0	5¼
Sulphate .....per ton	260	0 ..	300	0	240	0 ..	260	0
timony, ore	0	0 ..	180	0	160	0 ..	180	0
crude .....per cwt	24	0 ..	25	0	26	0 ..	0	0
regulus	34	0 ..	0	0	35	0 ..	36	0
French star	34	6 ..	35	0	36	0 ..	0	0
senic, lump	15	0 ..	15	6	12	0 ..	12	6
powder	6	3 ..	6	6	6	0 ..	6	6
aching powder	13	6 ..	14	0	11	3 ..	0	0
rax, East India refined..	0	0 ..	0	0	0	0 ..	0	0
British	60	0 ..	0	0	56	0 ..	0	0
omel .....per lb.	2	8 ..	0	0	2	8 ..	2	9
mphor, refined	1	7 ..	0	0	1	3 ..	1	4
perm, green ....per ton	52	6 ..	60	0	52	6 ..	55	0
rosive Sublimate, per lb.	2	2 ..	0	0	2	3 ..	0	0
een Emerald	0	0 ..	0	0	0	0 ..	0	0
Brunswick.... per cwt.	0	0 ..	0	0	0	0 ..	0	0

	1866.		1866.		1865.		1865.	
CHEMICALS.	s.	d.	s.	d.	s.	d.	s.	d.
Iodine, dry ..... per oz.	0	7¾ ..	0	8	0	6 2 ..	0	6¾
Magnesia, Carbon per cwt...	42	6 ..	45	0	42	6 ..	45	0
Calcined . per lb.	1	6 ..	1	8	1	6 ..	1	8
Minium, red ..... per cwt.	22	0 ..	22	6	21	6 ..	24	6
orango	32	6 ..	0	0	32	6 ..	33	0
Potash, Bichromate per lb.	0	6 ..	0	0	0	6 ..	0	6½
Chlorate	1	3 ..	0	0	0	0 ..	1	1
Hydriodato..per oz.	0	7 ..	0	7½	0	6 ..	0	6½
Prussiate....per lb.	1	1½ ..	1	1½	0	11½ ..	0	11¾
red	1	9½ ..	1	10	1	9 ..	1	9½
Precipitato, red .... per lb.	0	0 ..	2	9	2	9 ..	0	0
white	0	0 ..	2	9	2	9 ..	0	0
Prussian Blue	1	0 ..	1	10	1	0 ..	1	10
Rose Pink .....per cwt.	29	0 ..	0	0	29	0 ..	0	0
Sal-Acetos .....per lb.	1	2½ ..	0	0	0	11½ ..	1	0
Sal-Ammoniac ....per cwt.								
British	35	6 ..	37	6	36	0 ..	37	6
Salts, Epsom	8	3 ..	8	6	9	6 ..	0	0
Glauber.....	4	6 ..	6	0	3	6 ..	5	6
Soda, Ash.....per cwt.	0	3 ..	0	3½	0	2 ..	0	2¼
Bicarbonate..per cwt.	18	6 ..	19	0	11	0 ..	11	6
Crystals .....per ton	125	0 ..	127	6	92	6 ..	95	0
Sugar Lead, white per cwt.	38	0 ..	40	0	37	0 ..	37	6
brown	26	6 ..	27	6	28	0 ..	28	6
Sulphate Quinine....per oz.								
British, in bottle ..	5	3 ..	5	6	5	6 ..	5	9
Foreign	4	11 ..	5	0	5	5 ..	5	6
Sulphate Zinc.....per cwt.	11	6 ..	12	0	14	0 ..	15	0
Verdigris.....per lb.	0	11 ..	1	0	0	11 ..	1	0
Vermilion, English	2	11 ..	3	3	3	0 ..	3	4
China	2	10 ..	3	0	2	6 ..	2	8
Vitriol, blue or Rom. per ct.	28	6 ..	29	0	27	6 ..	28	0
COCHINEAL, per lb.								
Honduras, black	3	4 ..	5	0	3	2 ..	4	6
silver	2	2 ..	3	6	2	8 ..	3	4
Mexican, black	3	2 ..	3	7	3	2 ..	3	6
silver	2	11 ..	3	2	2	11 ..	3	0
Lima.....	3	0 ..	3	2	0	0 ..	0	0
Teneriffe, black.....	3	5 ..	4	10	3	1 ..	3	7
silver	3	2 ..	3	5	3	0 ..	3	3
DRUGS,								
Aloes, Hepatic ....per cwt.	100	0 ..	170	0	100	0 ..	200	0
Socotrine	140	0 ..	290	0	160	0 ..	290	0
Cape, good	40	0 ..	43	6	44	0 ..	45	0
inferior.....	25	0 ..	39	0	30	0 ..	42	0
Barbadoes	70	0 ..	280	0	60	0 ..	300	0
Ambergris, grey ....per oz.	24	0 ..	28	0	17	0 ..	23	0
Angelica Root ....per cwt.	20	0 ..	35	0	20	0 ..	35	0
Anisced, China star.....	140	0 ..	150	0	117	6 ..	0	0
German, &c.	26	0 ..	40	0	24	0 ..	40	0
Balsam, Canada ....per lb.	1	4 ..	1	5	0	10 ..	0	0
Capivi	1	11 ..	2	1	1	6 ..	1	7
Peru.....	4	10 ..	5	0	4	8 ..	4	9
Tolu	2	11 ..	3	2	3	6 ..	3	7
Bark, Cascarilla....per cwt.	20	6 ..	29	0	25	0 ..	36	0
Peru, crown & grey per lb.	1	3 ..	2	2	0	9 ..	2	3
Calisaya, flat	2	10 ..	3	0	3	0 ..	3	6
quill.....	2	3 ..	2	9	2	9 ..	3	3
Carthagena.....	1	0 ..	1	4	1	1 ..	1	10
Pitayo	1	0 ..	2	3	1	5 ..	2	3
Red	2	9 ..	13	6	3	0 ..	11	0
Bay Berries.....per cwt.	0	0 ..	0	0	0	0 ..	0	0
Bucca Leaves.....per lb.	0	6 ..	0	10	0	4 ..	0	10
Camomile Flowers	20	0 ..	100	0	15	0 ..	70	0
Camphor, China	125	0 ..	130	0	90	0 ..	92	6
Canella alba	0	0 ..	0	0	23	0 ..	33	0
Cantharides .....per lb.	2	4 ..	2	5	2	3 ..	2	5
Cardamoms, Malabar, good	5	3 ..	6	3	5	6 ..	6	0
inferior	3	6 ..	5	6	4	0 ..	5	3
Madras	2	9 ..	5	8	2	0 ..	3	9
Ceylon.....	3	9 ..	4	3	5	0 ..	5	5
Cassia Fistula.....per cwt.	15	0 ..	41	0	16	0 ..	25	0
Castor Oil, 1st pale ..per lb.	0	6½ ..	0	7	0	6½ ..	0	7
2nd	0	5¾ ..	0	6	0	4¾ ..	0	6
inferior and dark	0	4¾ ..	0	5	0	4¾ ..	0	4¾
Bombay, in casks	0	4½ ..	0	5	0	4½ ..	0	4¾
Castorum.....	1	0 ..	20	0	1	0 ..	20	0
China Root .....per cwt.	30	0 ..	33	0	16	0 ..	19	0
Cocculus Indicus	30	0 ..	36	0	23	0 ..	24	0
Cod Liver Oil .....per gal.	3	6 ..	7	0	6	0 ..	13	0
Colocynth, apple ....per lb.	0	7½ ..	1	1	0	8 ..	1	2
Colombo Root ....per cwt.	280	0 ..	480	0	70	0 ..	130	0
Cream Tartar								
French.....	102	6 ..	0	0	102	6 ..	105	0
Venetian	105	0 ..	0	0	105	0 ..	107	6
grey	90	0 ..	95	0	92	6 ..	95	0
brown	90	0 ..	92	6	90	0 ..	92	6
Croton Seed	500	0 ..	520	0	85	0 ..	95	0
Cubebs	85	0 ..	89	0	77	6 ..	80	0
Cummin Seed.....	17	0 ..	21	0	18	0 ..	26	0
Dragon's blood reed.....	200	0 ..	340	0	200	0 ..	300	0
lump	95	0 ..	280	0	90	0 ..	260	0
Galangal Root	12	6 ..	14	0	15	0 ..	16	0
Gentian Root.....	16	0 ..	20	0	22	0 ..	23	0
Guinea Grains .... per cwt.	60	0 ..	63	0	58	0 ..	60	0
Honey, Narbonne	50	0 ..	70	0	40	0 ..	80	0
Cuba	25	0 ..	35	0	23	0 ..	35	0
Jamaica	20	0 ..	61	0	23	0 ..	60	0
Ipecacuanha .....per lb.	10	6 ..	12	0	10	6 ..	11	0
Isinglass, Brazil	2	2 ..	5	4	1	9 ..	4	7
East India	1	6 ..	4	4	1	0 ..	4	2
West India	3	9 ..	4	2	3	0 ..	3	6
Russian	7	6 ..	10	0	8	0 ..	11	0
Jalap.....	1	0 ..	5	3	1	0 ..	6	3

DRUGS—*continued.*	1866. s.	d.		1866. s.	d.	1865. s.	d.		1865. s.	d.
Juniper Berries ....per cwt.	8	6	..	10	0	7	0	..	9	0
German and French ..	9	6	..	10	6	9	0	..	10	0
Italian										
Lemon Juice .....per deg.	0	0¾	..	0	0⅞	0	0¾	..	0	0⅞
Liquorice .....per cwt.			..							
Spanish	75	0	..	80	0	75	0	..	80	0
Italian	55	0	..	75	0	55	0	..	70	0
Manna, flaky	2	6	..	3	6	2	3	..	2	6
small	1	2	..	1	8	1	2	..	1	4
Musk .....per oz.	18	0	..	36	0	24	0	..	32	0
Nux Vomica	16	0	..	20	0	11	0	..	14	0
Opium, Turkey	13	6	..	14	6	15	0	..	15	6
Egyptian	6	0	..	7	0	0	0	..	0	0
Orris Root .....per cwt.	28	0	..	38	0	30	0	..	31	0
Pink Root ..... per lb.	0	0	..	0	0	3	0	..	3	2
Quassia (bitter wood) per ton	100	0	..	0	0	70	0	..	0	0
Rhatany Root .....per lb.	0	6	..	1	2	0	6	..	1	1
Rhubarb, China, round	3	0	..	11	0	2	6	..	7	6
flat	3	0	..	10	0	2	8	..	6	9
Dutch, trimmed ..	13	0	..	15	0	9	0	..	16	0
Russian	15	0	..	16	0	11	0	..	13	0
Saffron, Spanish	43	0	..	44	0	32	0	..	34	0
Salep..... per cwt.	140	0	..	152	6	130	0	..	0	0
Sarsaparilla, Lima	1	0	..	1	4	1	0	..	1	4
Para	0	11	..	1	1	0	11	..	1	2
Honduras	0	9	..	1	7	0	11	..	1	6
Jamaica	1	1	..	2	3	1	4	..	2	3
Sassafras .....per cwt.	10	6	..	11	6	15	0	..	16	0
Scammony, virgin ..per lb.	30	0	..	44	0	30	0	..	35	0
second	14	0	..	23	0	12	0	..	23	0
Seneka Root	3	9	..	4	0	3	2	..	3	3
Senna, Calcutta	0	0	..	0	0	0	0	..	0	0
Bombay	0	4	..	0	5½	0	4	..	0	6
Tinnevelly	0	4½	..	0	11	0	4	..	1	3
Alexandria	0	3	..	0	9	0	3½	..	0	8
Snake Root	3	6	..	0	0	5	3	..	5	6
Spermaceti, refined	0	0	..	1	2	1	0	..	1	2
Squills	0	1½	..	0	3½	0	0½	..	0	1
Tamarinds, E. India, per cwt.	18	0	..	20	0	15	0	..	17	6
West India	10	0	..	20	0	12	0	..	23	0
Terra Japonica—										
Gambier ....per cwt.	21	0	..	28	6	22	6	..	28	0
Cutch	26	6	..	33	0	22	6	..	24	6
Valerian Root, English	20	0	..	29	0	20	0	..	30	0
Vanilla, Mexican.....per b.	4	0	..	20	0	26	0	..	38	0
Wormseed.....per cwt.	0	0	..	0	0	11	0	..	12	0
UM—Ammoniac, drop, per cwt.	120	0	..	170	0	100	0	..	170	0
lump	40	0	..	85	0	40	0	..	85	0
Animi, fine pale	210	0	..	220	0	210	0	..	220	0
bold amber.....	190	0	..	220	0	190	0	..	210	0
medium	160	0	..	180	0	160	0	..	180	0
small and dark	100	0	..	150	0	100	0	..	155	0
ordinary dark	40	0	..	95	0	40	0	..	95	0
Arabic, E. I., fine pale picked	76	0	..	90	0	82	0	..	90	0
unsorted, good to fine	62	0	..	75	0	64	0	..	76	0
red and mixed	46	0	..	60	0	50	0	..	60	0
siftings	25	0	..	40	0	25	0	..	40	0
Turkey, picked, good to fine	170	0	..	210	0	130	0	..	175	0
second and inferior.	95	0	..	160	0	65	0	..	110	0
in sorts	46	0	..	70	0	32	0	..	50	0
Gedda	46	0	..	52	0	39	0	..	40	0
Barbary, white	90	0	..	100	0	72	0	..	75	0
brown	78	0	..	80	0	47	0	..	50	0
Australian.....	37	0	..	60	0	31	0	..	36	0
Assafœtida, fair to good	40	0	..	100	0	31	0	..	75	0
Benjamin, 1st quality	340	0	..	900	0	350	0	..	850	0
2nd „	240	0	..	300	0	280	0	..	300	0
3rd „	50	0	..	240	0	50	0	..	240	0
Copal, Angola, red	70	0	..	75	0	72	0	..	80	0
pale	70	0	..	75	0	75	0	..	85	0
Benguola	60	0	..	90	0	60	0	..	90	0
Sierra Leone .. per lb.	0	3	..	0	11	0	4	..	0	11
Manilla..... per cwt.	25	0	..	44	0	24	0	..	40	0
Dammar, pale .....per cwt.	50	0	..	60	0	34	0	..	47	6
Galbanum.....	160	0	..	170	0	160	0	..	170	0
Gamboge, picked, pipe	300	0	..	360	0	250	0	..	300	0
in sorts	140	0	..	240	0	140	0	..	240	0
Guaiacum.....per lb.	0	7	..	2	0	1	0	..	1	8
Kino ..... per cwt.	360	0	..	400	0	300	0	..	500	0
Kowrie	25	0	..	75	0	23	0	..	55	0
Mastic, picked ..... per lb.	8	6	..	0	0	6	0	..	6	9
Myrrh, gd. and fine, per cwt.	130	0	..	160	0	130	0	..	180	0
sorts.....	70	0	..	110	0	70	0	..	130	0
Olibanum, pale drop	68	0	..	82	0	65	0	..	70	0
amber and yellow	55	0	..	67	0	65	0	..	72	0
mixed and dark..	20	0	..	48	0	17	0	..	44	0
Senegal	97	6	..	100	0	70	0	..	85	0
Sandrac	95	0	..	110	0	75	0	..	95	0
Tragacanth, leaf	200	0	..	280	0	180	0	..	260	0
in sorts	70	0	..	180	0	80	0	..	160	0
OILS.....per ton	£	s.		£	s.	£	s.		£	s.
Seal	41	0	..	50	0	40	0	..	48	0
Sperm, body.....	0	0	..	120	0	80	9	..	0	0
Cod	48	0	..	50	0	51	10	..	52	0
Whale, Greenland	0	0	..	0	0	0	0	..	0	0
South Sea, pale.....	46	0	..	50	0	44	0	..	44	10
East India Fish.....	36	0	..	37	0	30	0	..	30	10
Olive, Galipoli ..... per ton	56	10	..	0	0	52	0	..	0	0
	s.	d.		s.	d.	s.	d.		s.	d.
Florence, half-chest ..	0	0	..	0	0	0	0	..	0	0
Cocoanut, Cochin .. per cwt.	51	6	..	52	0	39	0	..	39	9
Ceylon	46	6	..	47	6	38	0	..	38	6
Sydney	41	0	..	40	0	32	0	..	37	0
Ground Nut and Gin.										
Bombay	43	0	..	0	0	38	0	..	0	0

OILS—*continued.*	1866. s.	d.		1866. s.	d.	1865. s.	d.		1865. s.	d.
Madras .....per cwt.	52	0	..	53	0	36	0			
Palm, fine	41	0	..	42	6	36	0			
Linseed	39	0	..	39	6	32	6			
Rapeseed, English, pale	49	6	..	50	0	43	0			
brown	46	6	..	47	0	41	0			
Foreign pale	51	10	..	0	0	44	0			
brown	48	0	..	0	0	41	0			
Lard	79	0	..	0	0	60	0			
Tallow	38	0	..	0	0	38	0			
Rock Crude ..... per ton	£20	0	..	21	0	£17	0			
OILS, Essential—										
Almond, essential ....per lb.	26	0	..	0	0	0	0			
expressed	1	1½	..	0	0	0	10			
Aniseed	9	6	..	9	9	6	1			
Bay .....per cwt.	0	0	..	0	0	0	0			
Bergamot .....per lb.	9	0	..	13	6	9	0			
Cajeputa, (in bond) ..per oz.	0	3	..	0	3½	0	2			
Caraway .....per lb.	5	6	..	6	6	5	0			
Cassia	8	6	..	0	0	8	0			
Cinnamon (in bond) ..per oz.	1	0	..	3	9	1	0			
Cinnamon Leaf	0	4	..	0	6	0	6			
Citronel	0	3¾	..	0	5½	0	4			
Clove	2	9	..	0	0	0	0			
Croton	1	2	..	1	6	0	3			
Juniper.....per lb.	1	9	..	2	0	2	0			
Lavender	2	0	..	3	3	1	6			
Lemon	6	6	..	9	6	6	0			
Lemongrass.....per oz.	1	4	..	1	6	1	5			
Mace, ex.	0	1	..	0	2½	0	1			
Neroli	5	9	..	5	9	5	0			
Nutmeg	0	3	..	0	6	0	1			
Orange .....per lb.	5	0	..	8	0	5	0			
Otto of Roses .....per oz.	19	0	..	23	0	17	6			
Peppermint, per lb.										
American	15	3	..	15	9	13	3			
English	30	0	..	33	0	34	0			
Rhodium .....per oz.	0	0	..	0	0	0	0			
Rosemary .....per lb.	1	9	..	2	0	0	0			
Sassafras	5	0	..	6	0	3	3			
Spearmint	5	0	..	8	0	5	0			
Spike	0	0	..	0	0	0	0			
Thyme	1	5	..	1	10	1	5			
PITCH, British .....per cwt.	12	0	..	0	0	12	0			
Swedish	0	0	..	0	0	0	0			
SALTPETRE, per cwt.										
English, 6 per cent. or under	23	6	..	24	0	30	0			
over 6 per cent.	22	6	..	23	3	28	0			
Madras	21	0	..	22	0	27	0			
Bombay.....	18	0	..	21	0	24	0			
British-refined	27	6	..	28	0	32	0			
Nitrate of soda.....	13	0	..	13	6	14	0			
SEED, Canary .....per qr.	44	0	..	52	0	40	0			
Caraway, English .. per cwt.	32	0	..	34	0	0	0			
German, &c.	32	0	..	34	0	0	0			
Coriander	20	0	..	22	0	0	0			
East India.....	0	0	..	0	0	0	0			
Hemp.....	44	0	..	46	0	44	0			
Linseed, Black Sea.....	68	0	..	0	0	57	0			
Calcutta	71	0	..	72	0	57	0			
Bombay	73	0	..	0	0	59	0			
Egyptian	63	0	..	64	0	55	0			
Mustard, brown....per bshl.	0	0	..	0	0	0	0			
white	0	0	..	0	0	0	0			
Poppy, East India....per qr.	57	0	..	58	0	50	0			
Rape, English	0	0	..	0	0	0	0			
Danube	66	0	..	67	0	0	0			
Calcutta fine.....	64	0	..	65	0	54	0			
Bombay	73	0	..	74	0	63	0			
Teel, Sesmy or Gugy.....	65	0	..	69	0	57	0			
Cotton .....per ton	150	0	..	160	0	140	0			
Ground Nut Kernels per ton	360	0	..	370	0	280	0			
SOAP, London yel. .. per cwt.	28	0	..	32	0	20	0			
mottled	32	0	..	36	0	24	0			
curd	46	0	..	50	0	46	0			
Castile	40	0	..	42	0	40	0			
Marseilles	40	0	..	42	0	40	0			
Soy, China .....per gal.	3	3	..	0	0	3	3			
Japan	0	0	..	0	0	1	3			
Sponge, Turkey, fine picked	14	0	..	18	0	19	0			
fair to good	6	0	..	12	0	7	0			
ordinary ..	1	6	..	4	0	2	0			
Bahama ..	0	8	..	2	6	0	9			
TURPENTINE, Rough, per ct.	0	0	..	0	0	0	0			
Spirits, French	45	6	..	46	0	64	0			
American, in casks	0	0	..	0	0	0	0			
WAX, Bees, English	180	0	..	185	0	170	0			
German	195	0	..	200	0	162	0			
American	185	0	..	190	0	175	0			
white fine.....	0	0	..	0	0	8	0			
Jamaica	190	0	..	192	6	180	0			
Gambia	180	0	..	195	0	180	0			
Mogadore	140	0	..	170	0	125	0			
East India.....	160	0	..	190	0	150	0			
ditto, bleached	190	0	..	220	0	200	0			
vegetable, Japan	66	0	..	88	6	65	0			
WOOD, Dyr, per ton										
Fustic, Cuba.....	150	0	..	170	0	170	0			
Jamaica	100	0	..	110	0	110	0			
Savanilla	120	0	..	130	0	120	0			
Zante	0	0	..	0	0	0	0			
Logwood, Campeachy	165	0	..	180	0	180	0			
Honduras ..	100	0	..	105	0	100	0			
St. Domingo	90	0	..	95	0	80	0			
Jamaica	90	0	..	95	0	75	0			