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PAPERS ON FOREIGN PHARMACY

AND

OTHER SUBJECTS,

BY

MR. JOSEPH INCE,

Associate of King's College, London,
And Member of the Merchant Taylor's Company.

Candidate for the Secretaryship of the Royal Agricultural Society of England.

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CANDIDATE FOR THE SECRETARYSHIP

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PREFACE.

The following papers are a selection from a rather extensive series originally published in the *London Pharmaceutical Journal.* Most of those here reprinted have been chosen with special reference to their bearing on the state of Continental Science, with which the writer became practically acquainted while engaged in the special study of Chemistry, under M. Orfila at Paris. The remainder were written at the express wish of the late lamented Editor, Mr. Jacob Bell; and they are now presented with much respect to the Council of the Royal Agricultural Society of England.

31, SOUTHAMPTON STREET,
COVENT GARDEN.

August, 1859.

THE CODEX (1837) AND FRENCH PHARMACY.

THE Codex is the authorized standard of Pharmacy in France.

It is conveniently divided into sixty-three chapters, each one being preceded by a brief history of the contents, and general remarks. This admirable plan cannot be followed here—time and space forbid; nor would there be much advantage in such a literal survey, as a real knowledge of the *Pharmacopée Française* can only be gained by actual and repeated reference. The best practical insight will be ensured by an outline of those distinctive preparations, which are recommended either by intrinsic excellence or daily use. Let us enter without further preface on a few peculiar formulæ which meet us on the threshold.

EAU DE BARÈGES.—EAU SULPHURÉE.

Sodii Sulphuret.
Sodæ Subcarb. (Cristals.).
Sodii Chlorid., āā gr. iiss.
Aquæ Destillatæ, ℥xx. Dissolve and filter.

This is intended for medical purposes only. When used for baths or external application, it is then called

SOLUTION POUR BAIN DE BARÈGES ARTIFICIEL.

Sodii Sulphuret.
Sodæ Subcarb. Cristal.
Sodii Chlorid., āā ʒij.
Aquæ Puræ, ʒx. Mix and filter.

The one should never be substituted for the other, still less should either be made with Sulphuret of Potassium (*Foie de Soufre*) instead of Sulphuret of Sodium. Whilst imbibing Pharmacy from foreign springs, it may be as well to know that French Potash water (*Eau Alcaline Gazeuse*) contains four grains, and Soda water (*Eau de Soude carbonatée*) one grain, of the bicarbonate to an ounce.

EAU DE RABEL.—ACIDUM SULPHURICUM ALCOOLISATUM.

Sulphuric Acid, one part.
Alcohol, three parts. Mix by degrees.

The Codex has a strong partiality to this species of solution, as for instance:—

EAU RÉGALE.—ACIDE NITRO-MURIATIQUE.
(Aqua Regia.)

Acid. Nitric, one part.
Acid. Hydrochloric, three parts. Mix.

ACIDE NITRIQUE ALCOOLISÉ.—ESPRIT DE NITRE DULCIFIÉ.
(Spirit. Etheris Nitric.)

Nitric Acid, one part.
Alcohol, three parts. Mix.

Two preparations should be noticed for their constant employment, the second one differing a little from our own.

LIMAILLE DE FER PORPHYRISÉE.

Iron filings, beaten in an *iron* mortar, until quite bright; reject the powder, as it contains some oxide of iron, and reduce the bright filings to fine powder.

ARSÉNITE DE POTASSE.—LIQUEUR ARSÉNICALE DE FOWLER.

(Liquor Potassæ Arsenitis.)

Arsenious Acid.
Subcarbonate of Potash, āā five parts.
Distilled Water, 500 parts.
Sp. Melissæ Comp., 16 parts.

Three varieties of Potash are mentioned in the Codex, all of them in extensive use. *(a)* Caustic Potash, made by precipitation with Lime from Carbonate of Potash. The Carbonate of Lime thus formed being separated by filtration; the liquid Caustic Potash evaporated to dryness, and fused, constituting the real *Pierre à cautères*, called pharmaceutically *Potasse Caustique à la Chaux*, not to be translated Potassa *cum* Calce. *(b)* Pure Potash. *Potasse à l'alcool.* This is the former dissolved in three times its weight of alcohol. The clear solution is to be rapidly evaporated and fused, care being taken to remove the black carbonaceous mass which forms on the surface towards the end of the operation.

(c) Poudre de Vienne, made by simply mixing fifty parts of Caustic Potash with sixty of Quicklime. This powder, before using, should be moistened with a little alcohol, and is a very powerful escharotic.

Sulphuret of Potassium is directed to be made by fusing at a gentle heat (*à une douce chaleur*) one part of Sulphur and two parts Carbonate of Potash. A method quite impossible—a constant red heat is requisite to effect the

change. A saturated solution is made by dissolving one part of Sulphur in three parts Liquor Potassæ, containing when finished nearly half its weight of Liver of Sulphur. This is one of the numerous proofs of ingenuity scattered through the Codex. Thus, the Perchloride of Gold made by the simple agency of Aqua Regia is in itself a very deliquescent salt, but by the addition of a small quantity of common salt, in the proportion of 16 : 85, it can be easily preserved. No less ingenious is the method of recovering essential oils that have been injured by long keeping, which are merely redistilled in water, with a small quantity of the plants from which they were originally produced; or Appert's well known plan of preserving acid juices, such as raspberry or orange; following which, the careful amateur fills up his bottle, well corks it, tightly securing it with string. With great mistrust he plunges it in warm water, there leaves it until the water boils for about one quarter of an hour; the bottle is then rescued, the cork well rosined, and the contents keep till opened. Why *sal prunella* balls are fused with $\frac{1}{128}$ part of common sulphur is a mystery we have not at present solved.

As a book of reference for strictly chemical products, the Codex is unrivalled. The details of manufacture and the results obtained are carefully stated. Thus, Quinine is mentioned, and its various salts described, such as the Sulphate, Chloride, Acetate, and Nitrate, as well as the Prussiate of Quinine and Iron. The Sulphate, Muriate, and Acetate of Morphia receive a notice, whilst there is given a method for converting Strychnine into its acid combinations. Mannite is made by dissolving manna in

boiling alcohol, the solution filtered, and then crystallized. Cantharidine, Piperine, Salicine, and Urea are all described. Why should gentlemen in the country imagine that there is a charmed circle drawn round Temple Bar, within whose magic boundary wisdom alone resides? Why should they have no confidence in a single chemical unless it bears the London mark, when by the aid of the Codex and a pocket dictionary they could be their own manufacturers, and feel an honest pride in their self-made specimens?

A few words on purification may not be out of place. Mercury, as well as Phosphorus, is distilled over into water, then strained through chamois leather. Sulphuric Acid is first heated in a sand-bath with half a drachm of Sulphur to the pound, to free it from Hyponitrous acid, and then distilled, with the usual precaution of adding a small coil of platina wire (*trois ou quatre spirales en fil de platine*). Two-thirds are drawn over, and the first three ounces rejected. The distillation is not to be carried beyond this point on account of the frequent bumping (*des Soubresauts*) occasioned by the accumulation of Sulphate of Lead. Nitric acid (*acide azotique*) is redistilled with Nitrate of Baryta to rid it of all traces of Sulphuric Acid. Nitrate of Silver is first added as a test for chlorine. Fearful of awakening the ire of Professor Redwood, we quote the following extract:—"Oxide of Zinc should be entirely soluble without effervescence in Hydrochloric acid. This solution should give a precipitate with Ammonia quite soluble in an excess of the same."

Chemistry, applied or abstract, is dangerous ground,

for it leads to endless lucubrations. Let us hasten from it to the most important, because most useful, subject presented in the Codex.

Syrups.—Les Sirops.

Of plain syrup there are two varieties; the first called Sirop Simple, or Sirop de Sucre, Sirupus Simplex. The whites of two eggs are beaten up with three pints of water, of which one pint is kept in reserve. Twelve pounds of sugar are dissolved in the remaining two pints, with the addition of one pint of common water. Solution being effected by a gentle heat, the whole is allowed to boil, the one pint of albuminous water being gradually thrown in, while the scum that rises to the surface is constantly removed. Afterwards it is filtered through a strainer. The second is the Sirop Simple Blanc, Syrupus Simplex *Albus*, the general basis of the rest.

Sacchari Albissimi, 2lb.
Aquæ Puræ, 1lb.

Dissolve without the aid of heat (*à froid*), mix it with two ounces of prepared animal charcoal, and after twelve hours filter it through paper. With regard to Syrups, especially those made with vegetable extracts, the advantage of filtration cannot be overrated.

A full description of these medicinal syrups may not prove uninteresting to the English Chemist and Druggist.

Syrupus Acaciæ.—Sirop de Gomme.

Gum. Acaciæ.
Aquæ *Frigid.*, āā ℥j.
Syrup. Simpl., ℥viij.

Wash the Gum Arabic in cold water, and dissolve it without heat; strain, and add the solution to the syrup; let it afterwards *just boil.*

It contains seventy-two grains to one ounce,

SYRUPUS ACID. TART.—SIROP D'ACIDE TARTRIQUE.

Tartaric Acid, one part.
Distilled water, two parts; dissolve, and add
Syrup. Simpl. bullient., 50 parts.

SYRUPUS FLOR. AURANTII.—SIROP DE FLEURS D'ORANGER (or *Sirop de Naphe*).

Aquæ Flor. Aurantii, one part.
Sacchari Albi, two parts.
Dissolve without the aid of heat, and filter.

SYRUPUS BELLADONNÆ.—SIROP DE BELLADONE.

Extract. Belladonnæ, gr. xxxij.
Aquæ, ʒss.; dissolve, and add
Syrupi Bullientis, ʒxvj.
That is, two grains of extract to one ounce.

Many Syrups are made in the same manner, as for instance:—

SYRUPUS IPECACUANHÆ.—SIROP D'IPECACUANHA.

Alcoholic Extract of Ipecacuanha, four grains to one ounce.

SYRUPUS LACTUCÆ.—SIROP DE THRIDACE.

Ext. Lactucæ, eight grains to one ounce.

The next is a much better preparation than our own, for it seldom changes.

SYRUPUS CROCI.—SIROP DE SAFRAN.

Saffron, ʒj.
Malaga Wine, ʒxvj.
Cut the Saffron in small pieces; let it infuse for two days in the wine; press and filter; dissolve in the strained liquor,
White sugar, ʒxxiv.,
Using no stronger heat than a water-bath.

The Malaga offers but little objection to the process, as

it is well known that foreign wines, like the language, take some time before they reach the head.

CAPILLAIRE.—SYRUPUS ADIANTHI.

Capillaire, ℥vj.
Aquæ Bullientis, ℥xlviij.
Sacchari Albi, ℥lxiv.

Infuse two-thirds of the *Capillaire* in water, and make it into a syrup with the sugar. The remaining *Capillaire* is to be infused for two hours in the syrup, kept hot by means of a water-bath, and then filtered. It is doubtful if *Capillaire* be ever rightly made this side the Channel.

Here is an example of a syrup made from the leaf:—

SYRUPUS DIGITALIS.—SIROP DE DIGITALE.

Fol. Digitalis, ℥iij. gr. xij.
Aquæ Bullientis, ℥xvj.
Sacchari Albi, ℥xxxij.

Infuse for six hours, strain and make it into a Syrup with a gentle heat. One ounce contains four grains of soluble matter of digitalis.

Syrupus Opii must not be overlooked, as it is in constant use:

Extract. Opii, gr. xvj.
Aquæ, ℥ss.
Syrupi Bullientia, ℥xvj.

Dissolve the extract in the water, and when filtered, add it to the boiling syrup. One ounce contains one grain.

Syrup. Opii, ℥j.
Sp. Ammon. Succinat., gtt. ij.

constitutes the *Sirop de Karabé;* this mysterious word is the Persian term for Amber. Closely allied to the Opium syrup is the Syrupus Papaveris—*Sirop de Pavot Blanc; Sirop Diacode.* This is made from the Alcoholic Extract, six grains to one ounce. Being an extremely

bad preparation, and liable to change, its formula need not be given here. That this is not a private notion M. Cazenave's remark will prove: "Mais il a l'inconvénient de s'altérer facilement, ce qui le fait remplacer quelquefois par le sirop d'opium." Syrup of Poppy, when well made, will keep at least two years in an unaltered state.

There are many syrups of a far more active nature than the preceding, to which the term *chemical* may not be improperly applied. One will serve as a type for the whole:—

SYRUPUS QUINÆ SULPHATIS.
(Sirop de Sulfate de Quinine.)
Quinæ Sulphatis, gr. xxxij.
Syrupi Albi, ℥xvj.
Aquæ Destillatæ, ℥iiss.
Alcohol. Sulphuric, gtt. viij.
(Eau de Rabel).

The Quinine is dissolved in the water by the addition of the acid spirit, and added to the cold syrup.

The Syrups of Acetate and Sulphate of Morphia are made in the same way, with the respective addition of a little acetic or dilute sulphuric acid. One ounce contains one quarter of a grain of Morphia. The Syrup of Ether, *Sirop d'Ether*, made by shaking up one ounce of Sulphuric Ether with sixteen ounces of simple syrup, is almost as uncertain a preparation as the Syrup of Hydrocyanic acid, which should be banished from the Codex. The Syrups of Absinth, Horehound, and Hyssop, are made from the dried tops (*sommités sèches*) of the plant: those of Gentian, Rhubarb, and Marshmallow (*Guimauve*), are made from the dried root (*racines sèches*),

while many, as Asparagus (*Pointes d'Asperges*), Buckthorn (*Nerprun*), Centifolia Rose, and Nettle (*Ortie*), are made from the depurated juice.

The Compound Syrups possess but little interest, as they never could be made with advantage by the English Chemist. Syrupus Ipecacuanhæ Comp., called often *Sirop de Desessart*, bears no relation whatever to our Dover's powder; but is composed of Ipecacuanha, Senna, Thyme, and Epsom Salt—not forgetting the white wine. Syrupus Sarzæ Comp., is called in prescriptions *Sirop de Cuisinier*, and the Compound Syrup of Absinth, *Sirop d'Armoise composé;* the one most frequently in vogue contains sixteen ingredients, therefore the less said of it the better. This part of the subject must be concluded; but it would be strange indeed to leave unnoticed one perhaps better known by name than any of the rest:—

SIROP D'AMANDES.—SIROP D'ORGEAT.

Amygdal, dulc., 1lb.
— Amar., five ounces.
Sacchari Albi, 6lb.
Aquæ, 3lb four ounces.
Aquæ Flor. Aurantii, eight ounces.

Blanch the almonds, and beat them into a fine paste in a stone mortar with four ounces of water and one pound of sugar. Mix this paste with the rest of the water and press. Add to the emulsion thus made, the remaining sugar, dissolving it by means of a water-bath at a very gentle heat. As soon as the sugar is melted, add the Orange-flower water, and strain the syrup through some thick muslin.

The final directions are, to put it in well dried bottles and let them stand on their heads (*renversées sur leur*

goulot), which they will be ready to do for joy, as it is the most agreeable syrup that can well be made.

Mellites are syrups made with honey ; their preparation need not be described. Mellite simple (*Sirop de Miel*) is Water, one part, Honey three parts. Oxymel oximel simple is White Vinegar, one part, Honey two parts. Oxymel Scillæ oximel scillitique, is Vinegar of Squills, one part, Honey two parts. Radical Vinegar is made by distillation from Acetate of Copper, purified by being again distilled; while the Acetum Destillatum is made from wine.

Acetum Camphoræ.—Vinaigre Camphré.

Camphoræ ℥j.
Aceti Fort., ℥xl.

Acetum Opii.—Vinaigre d'Opium, or Teinture Acétique d'Opium.

Opii, ℥j.
Aceti Fort., ℥vj.
Sp. Rectif., ℥iv.

Acetum Rosæ.—Vinaigre Rosat, is Rosæ Gallicæ Siccat, ℥j. ; Acet Fort., ℥xij.

A few ordinary compounds differ from our own. Hofmann's Ether is a concentrated mixture of equal parts of Alcohol and Sulphuric Ether. An etherial water, *Eau Ethérée*, is likewise made by shaking up one part Ether with about ten parts Water.

Ceratum Simplex.—Cérat Simple.

Ol. Amygdal, ℥xij.
Ceræ Albæ, ℥iv.

Unguentum Hydrargyri Nitratis.—Pommade Citrine.

Lard.
Olive Oil, āā ℥viij.
Mercury, ℥j.
Nitric Acid, ℥iss.

The Mercury is ordered to be dissolved in the acid with a gentle heat (a precaution quite unnecessary), and to be then added to the mixed lard and oil, half cold (*à moitié refroidis*), which we need not say would result in failure. Simple oils, such as Chamomile and Rose, are made by maceration in four times the quantity of Olive Oil.

Conserves usually consist of one part of pulp to one and a half sugar. French Electuaries are of such a complicated nature that they may be left in peace. That strange assemblage called *Thériaque*, boasts of more than seventy ingredients, including roots, seeds, herbs, unmentionables, and one ounce and a half dried vipers. This deplorable nonsense is beyond ridicule.

It is said to contain one grain of opium in seventy-two—let us hope for the best.

The Jellies — *Gelées;* Pastes — *Pâtes;* Species — *Espèces*, possess no general interest here. They are well described in Beasley's admirable *Formulary.* Besides which, there is always a *trade way* of making them, which excludes all private competition.

It will be sufficient to indicate the strength of the various *Tablettes*—Lozenges.

Tablettes de Mercure doux, or *Pastilles Vermifuges,*	contain each,	Calomel, 1 grain.
Tablettes de Rhubarbe . .	"	Rhubarb, 1 grain.
Tablettes de Fer . .	"	Porphyrized Iron, 1 grain.
Tablettes de Manne . . .	"	Manna, 2 grains.
Tablettes de Magnésie . .	"	Magnesia, 3 grains.
Tablettes d'Ipécacuanha .	"	Ipecacuanha, $\frac{1}{4}$ of a grain.

Mucilage of Gum Arabic is made with equal parts of

powdered gum and *cold water*. Mucilage of Tragacanth ℥j. ℥viij. Mucilage of Linseed ℥j. ℥vj. Camphor mixture—*Eau Camphrée*, contains two grains of Camphor to one ounce. Etherial Camphor mixture—*Eau Ethérée Camphrée*, nine grains of Camphor, and twenty-five grains of Ether to one ounce.

EAU DE GOUDRON.—TAR WATER.

Picis Liquid, ℥j.
Aquæ Communis, ℥xxx.
Shake up from time to time for about ten days and then decant.

Un Sparadrap is a plaster *spread*, as the common Wax Plaster.

TOILE DE MAI.—SPARADRAP DE CIRE.

Ceræ Albæ, ℥viij.
Cl. Amydal, ℥iv.
Terebinth, ℥i.

How English sticking-plaster is made, *Sparadrap de Colle de Poisson* will reveal, called in plain French *Taffetas d'Angleterre.*

What could the native Briton do without his tea? Not all the ices of the *Café aux Trois Frères* would warm his heart, but he would still sigh for his island beverage. Well, then, the Codex, in the kindest manner, offers him the best substitute—a Phtisan. Here are the most popular ones:—

TISANE DE CASSE.—EAU DE CASSE.

Cassiæ Fistulæ (*Casse en Gousses*), ℥ij.
Aquæ frigidæ, Oj.

TISANE DE CHIENDENT.—TRITICUM REPENS.

Dog's Grass, ℥j.
Liquorice Root, ʒiiiss.

Boil the Chiendent in a pint-and-a-half water to a pint. Add the liquorice; infuse for one hour, and strain.

TISANE DE FLEURS DE TILLEUL.

Dried Lime Flowers, ℥ij.
Aquæ Bullientis, Oj.

Infuse for half an hour, and strain. *Tisane de Violettes* is made in made in the same way.

TISANE DE GOMME.—EAU DE GOMME.

Gum Acaciæ, ℥ss.
Aquæ *frigidæ*, Oj. Dissolve and strain.

TISANE D'ORGE.—EAU D'ORGE.

Pearl Barley, ʒvj.
Liquorice Root, ʒiiiss.

Boil the pearl barley in a pint-and-a-half of water to a pint. Infuse the liquorice root for about half an hour, and strain.

TISANE DE TAMARIN.

Tamarind Pulp, ℥j.
Boiling Water, ℥xxxij.

Infuse for an hour, and strain.

These formulæ differ occasionally by a few grains from the authorized quantities, but are so made for household use and in the hospitals. Often one or two ounces of some of the syrups already mentioned are added to improve the taste. *Tisane de Violettes* is in as much request as barley water.

Un Apozême, or rather *Apozème*, is a much stronger preparation than the Tisane. It may be defined as the difference between Twining's tea and other people's. *Les Apozèmes* have no fixed form in general, but are

the result of a prescription. One may be given as a sample of the rest.

APOZEMA PURGANS.—POTION PURGATIVE.

Folior. Sennæ, ℥j.
Sodæ Sulphat. ℥ij.
Rad. Rhei, ℥ss.
Mannæ, ℥viij.
Aqua Bullientis, ℥xiv.

Infuse the Rhubarb and Senna in the boiling water for half an hour, and strain. Dissolve the Soda and Manna with a gentle heat in the infusion, and once more strain.

Distilled waters, for which the Latin term is *Hydrolatum*, form an important item in the Codex; yet there are only three that have a particular interest to ourselves.

EAU DISTILLÉE DE LAURIER CERISE.

(*Aqua Lauri Cerasi.*)

Fol. Lauri Cerasi, 2 parts.
Aquæ, 4 parts.

Cut the leaves and distil over one-half of the water by means of a very gentle heat. It is important that the distillate should be carefully filtered, in order to separate the essential oil, which would otherwise remain in suspension and materially increase the strength.

This is not to be substituted for the following preparation:—

EAU DISTILLÉE D'AMANDES AMÈRES.

(Bitter Almond Water.)

Almond Cake (*Tourteau récent d'Amandes Amères*) two pounds. Make the Cake into a very thin paste with water, and put it into a retort. Let it macerate twenty-four hours. The retort being placed over a vapour-bath, distil four pounds—that is, the product must exactly double the weight of the almond-cake. This water must also be carefully filtered.

EAU DISTILLÉE DE TILLEUL.
(Aqua Florum Tiliæ.)
Lime Flowers, 1 lb.
Aquæ, q.s.

Draw over four pounds of water by means of a vapour-bath. Aqua Florum Sambuci—*Eau de Sureau,* is made in the same way.

An old French adage says,

"Il n'y a que les méchants qui sont buveurs d'eau
C'ést bien prouvé par le déluge."

Therefore, one word for wine. Vinum Colchici (*Radicis et Seminum*) and Vinum Scillæ are all made in the proportion of one ounce to sixteen ounces Malaga wine. Vinum Antimon., *Vin Ĕmétique*, two grains to the ounce; Vinum Opii, *Laudanum liquide de Sydenham*, one grain of Extract of Opium to twenty drops; *Vinum Opii Rousseau,* unlike the former, contains no aromatics, and is made by fermentation.

Opii, ʒiv.
Mellis, ℥xij.
Aquæ Calidæ, 3lb 12ozs.
Yeast (*levure de bière fraîche*), ʒiiss.

A sort of spruce beer is called *Sapinette.*

The difference between a *Teinture* and *Alcoolat* is, that the first is made by maceration in spirit, the second by distillation, while the term *Alcoolé* is the same as *Teinture.* Few remarks will be requisite, as reference is much better than description.

TINCTURA CAMPHORÆ.—ALCOOL CAMPHRÉ.
Camphoræ, ℥j.
Alcohol, ʒvii.

When made much weaker, in the proportion of ℥j. ʒxl., it is then called *Eau de Vie Camphrée.*

TINCTURA SAPONIS.—TEINTURE DE SAVON.

White Soap, ℥iij.
Subcarbonate of Potash, 72 grains.
Alcohol, ℥xij.

This deserves a little credit for its ingenuity:—

TINCTURA OPII.—TEINTURE D'EXTRAIT D'OPIUM.

Ext. Opii, ℥j.
Alcohol, ℥xij.

The Compound Tinctures scarcely need a mention; their contents are so numerous as to inspire fear—of leaving some of them out. Tinctura Aloes Comp., is the *Elixir de Vie;* Tinctura Aromatica, is the *Essence Céphalique*, or *Bon Ferme;* Tinctura Jalapæ Comp., is the *Eau de Vie Allemande.* Etherial Tincture of Perchloride of Iron possesses some interest from its occasional use with us.

Ferri Chloridi, ℥j.
Hoffman's Anodyne, ℥vij. Mix.

Nothing remains but to throw a little light on French Prescriptions. Practice makes perfect, but no amount of shrewdness can supply the deficiency of a well-grounded study of Nöel and Chapsal's Grammar, and there is no revolutionary road to foreign languages. Some expressions, however, the Academy Dictionary ignores.

Blanc de fard, is Bismuthi Subnitras.
Cristal Minéral, is Fused Purified Nitre.
Ethiops Martial, is Ferri Oxydum Nigrum.
Foie de Soufre, is Sulphuret of Potassium.

Foie de Soufre calcaire, is Sulphuret of Calcium.
Magistère de Soufre, is Sulphur præcipitatum.
Pierre infernale, is Fused Nitrate of Silver.
Précipité blanc, is Calomel prepared by precipitation from Nitrate of Mercury by Hydrochloric Acid in slight excess, quite distinct from our White Precipitate.
Sel Végétal, is Potassæ Tartras.
Sel de Seignette, is Sodæ Potassæ Tartras.
Morelle (la), is Solanum Nigrum.
Thridace, is Extractum Lactucæ.

The reader will be relieved to find that he will not be treated to a long definition of weights and measures. One kilogramme, for all general purposes, means 2lb. avoirdupois ; ℈j. is 24 grains ; 1 gros, 72 grains. The gramme in practice may be considered a quarter of a drachm, sixteen ounces make one pound, and a quateron means four ounces. Here is the popular method of indicating a dose.

Une cuiller, sometimes *cuillère*, a spoon.
Une cuillerée, a spoonful.
Une cuillerée ordinaire, a tablespoonful.
Une cuiller à bouche, five drachms.
Une cuiller à café, one drachm and a quarter, *i. e.* a large teaspoonful.
Un verre, a glass containing five ounces.

A few terms are employed in describing powders, such as *passer au tamis*, pass through a sieve, either *de crin*, horsehair, or *de soie*, bristle (not silk). Some are prepared by the aid of a *pilon de bois*, or wooden pestle, or reduced *au moyen de la râpe*, by rasping; *couper par*

tranches is to slice, *cribler* to sift, *ratisser* to scrape, *vanner* to winnow, and *égoutter* to drain. While for syrups, *un blanchet* is a strainer; for tinctures *le marc* means the grounds or remainder from pressing, and the tub for the operation is *un seau en bois.* (*Poids de marc* means eight ounces.) *Toile de coutil* is ticking, and *une chausse* a straining bag, consequently *passer à la chausse* is to strain. In Pharmacy *fer étamé* means tinned iron, *un entonnoir à déplacement* is a percolator, *une crûche de grés*, so often mentioned, is a brown glazed earthenware vessel, *un camion* is also a matras of burnt clay, *un bain-marie* is a water-bath, *les eaux-mères* the residual liquid of a saline crystallization, *les zestes* thin orange-peel cuttings, *un grumeau* a lump, *à jeun* fasting, *la charpie* lint, *l'ouate* wadding, which, when made into a pledget, is called *un plumasseau.*

Une Potion is the word Mistura, when thick or mucilaginous called *Looch*, sometimes *Look.* (Would it be indelicate to mention that *Pommade*, when meant for French, has two m's, *Pastilles* two ll's? the English for this is not Pastile but Pastil.) *La Cannelle* means Cinnamon, and not *Cannella Alba*, which is invariably specified as *La Cannelle blanche*, hence *Poudre ou Teinture de Cannelle* is Pulvis vel Tinctura Cinnamoni. The contractions used are of no importance—*f.* means *faire, fiat. P. ég. parties égales, partes æquales. Qq. quantité quelconque, Q. S.* M.D S., Misce, Dona, Signa. Two remedies so often used at home are scarcely ever given abroad—Prussic acid, which is considered dangerous and uncertain, and Calomel, which is smiled at as an English folly, thus in *Tras los Montes, l'Anglais pur*

is divided between his Tea when well, and his Calomel when ill.

Three works will be found of especial service in following out the subject:—*Eléments de Chimie*, M. Orfila. *Nouveau Traité de Pharmacie théorique et pratique*, Soubeiran. *Histoire Abrégée des Drogues Simples*, Guibourt.

Care must be taken not to translate too literally, else the most frequent direction of the Codex *passez avec une légère expression*, would convey a stronger notion that the subject should be treated with indifference than that it should be gently strained and filtered. Warning also is afforded by the venerable anecdote according to which the sign of the road-side inn, *ici on loge à pied et à cheval*, was rendered, Here they lodge on foot and on horse, not much accommodation for either man or beast.

Here let us take a lingering farewell. The subject has the strongest personal interest for the writer, for it recals that happy year, when a small room, with a red-brick floor, was the solitary student's home ; coffee and a wood fire his height of luxury. The Winter brought with it its snow and Chemistry; Summer its fierce heat and Botany. Pharmacy now enthroned in the person of Soubeiran, where Orfila reigned so long, was indeed at a low ebb, though it did its best to struggle on in the Rue d'Arbalète ; but it would ill become a stranger not to acknowledge the genuine kindness of its professors, and the deep regret with which he left behind his companions of the Quartier Latin. Truth must be spoken—Medicine ruled all at Paris. The *Ecole*

de Médecine held out every temptation. Its noble amphitheatre could and did hold more than a thousand persons, who both here and at the Sorbonne, fairly blocked up the windows in their anxiety to attend. Its library contained about 30,000 volumes, to which, as well as to its museums, access was free; while the learner who wished to exchange books for Botany, was sure of finding a warm reception in the *Rue d'Enfer*. The associations of the spot are as clear and bright as ever, and have helped more than once to triumph over the dreary monotony of long hours and the drudgery of business; for has not the most enthusiastic sometimes felt occasions on which he would willingly have consigned Pharmacy and its accessories to that bourne from which no traveller returns?

There is no nationality in Science, no other barrier exists between us and the Wisdom of the World but the fetters of a separate language—remove them when you can. There was a time everything French was deemed frivolous! Rapid communication and mutual intercourse have removed the remaining prejudice ignorance had left. It has been found out that there are equally profound studies and devoted students on both sides the Channel. France has bequeathed Lavoisier, England has given Sir Humphrey Davy. The high road to self-respect is mutual good-will and just appreciation. Change is the atmosphere of Paris; wave after wave has rolled over it, with all the swift unreality of a dissolving view, from Charlemagne to Napoleon, until the transformations of the gay city can astound no more; now

red with blood, now decked out for a holiday. Science remains the same, unaltered save in advancement, for Truth has its own inherent Royalty: Science rests upon it. The remembrance of our late residence will never fade away — the spell is unbroken, and the charm remains.

RASPAIL.

A REASONABLE doubt may be entertained as to whether the little books that profess to teach the public Medicine do so; for the anxious purchaser, in case of actual need, consults his own physician, and leaves the Domestic Manual on the shelf.

Still they contain plain instructions, with hints on familiar remedies, which have their use; nor does the Chemist raise the least objection to them, since he well knows that every household blest with such a guide, relies daily less on common sense, and more on physic.

Our neighbours, on the other side the Channel, trust in Raspail, as we have faith in Graham.

The word *Camphor* best describes the system. It is ordered in every shape, either used as snuff (*Camphre à priser*) or smoked in cigarettes, taken internally for most diseases, or exhibited in various forms as an external application. Camphor is the Proteus of Raspail's Hygiène. The French, who jest with everything, laughed even at the cholera, and when, during its ravages, it was asked despairingly, "Qu'en ferons-nous?" the answer was given in Raspail's words, "Camphorons nous, Messieurs."

An outline of the theory and practice of this strange

but often successful mode of treatment would prove amusing, but not very useful. The best argument in its favour is its settled popularity : indeed, it has met with such acceptance, that a few formulæ connected with it have passed into general use.

They are as follows :—

I.

POMMADE CAMPHRÉE.—CAMPHORATED POMATUM.

Adipis Recentis, ℥iij. ʒij.
Pulvis Camphoræ, ℥j. ℳ.

Families who have no grated Camphor are directed to substitute for it two ounces of Spirit of Camphor, allowing the alcohol to evaporate before using the pomade.

II.

CAMPHOR CERATE.

Adipis Recentis, ℥x.
Ceræ Flavæ, ℥iij.
Pulv. Camphoræ, ℥iij ℳ. S. A.

III.

VINAIGRE-CAMPHRÉ.—CAMPHOR VINEGAR.

Pulvis Camphoræ, ℥j.
Aceti Destillati, ℥xxxij. Mix.

Equal in importance, and more frequently prescribed, is the cooling lotion, met with as "Eau Sédative (Raspail)." This is of three strengths :

IV.—(*a.*)

EAU FORTE.—STRONG SEDATIVE WATER.

Liquor Ammoniæ, ℥iiiss.
Spirit. Camphoræ, ʒiij.
Bay Salt, ℥j. ʒj.
Aquæ Destillatæ, ʒxxxij.

Dissolve the salt in the water, with the addition of a few drops of ammonia ; allow all impurities to subside, and add the clear liquor

to the camphor and ammonia previously mixed together by agitation in a stoppered bottle.

This preparation is considered much too strong for ordinary use, and is intended only for veterinary practice.

V.—(*b.*)

SEDATIVE WATER, MEDIUM STRENGTH.

Liquor Ammoniæ 2¾ozs.
Spirit. Camphoræ, ℥iij.
Bay Salt, ℥j. ℥j.
Aquæ Destillatæ, ℥xxxij.

This is seldom used, but when desired may be conveniently made by adding eight ounces of water to the former one.

VI.—(*c.*)

EAU SÉDATIVE COMMUNE.—COMMON SEDATIVE WATER.

Liquor Ammoniæ, ℥ij. j .
Spirit. Camphoræ, ℥iij.
Bay Salt, ℥j. ℥j.
Aquæ Destillatæ, ℥xxxij.

The effect of this remedy is described as nothing less than marvellous, its action depending partly on the absorption of ammonia and salt (the two great solvents of the coagulation of the blood) by the superficial vessels of the skin, and partly, of course, upon the camphor which it contains. By keeping, it acquires a smell of bitter almonds, and after a certain time a white powder is deposited. It is not then considered as unfit for use, but requires to be well shaken up before applying it.

Under the influence of this preparation fever is said to disappear, and various maladies to be subdued. To what extent such statements may be true, it is not the province of a Chemist to decide.

GERMAN AND PRUSSIAN PHARMACY.

It has happened, doubtless, to many readers of these lines to have received a long and singularly ill-favoured strip of paper, recognized at once as a German prescription. The first impression that suggested itself probably was, that while the schoolmaster had been abroad, the writing-master stopped at home; the next feeling, a natural wish to gain some clue to its contents, and to know something of the Pharmacy with which it was connected.

Such a subject, properly treated, would fill a book; but the design of this short notice is limited to details which may prove useful in daily experience.

No one can be acquainted with the restrictions placed on foreign Chemists without indulging in the quiet satisfaction of being an Englishman. The actual arrangement of the shop is under the supervision of the Medical Police. A regular list points out such articles as may be bought, including rectified sulphuric acid, æther, spirit of wine, and morphia; another table indicates a class of drugs to be entirely separate from the rest, such are nitric acid, aqua plumbi, cantharides, and phosphorus, besides several tinctures, herbs, and extracts. While those deemed poisons must be carefully locked up, as,

for example, arsenic, strychnia, veratria, and Scheele's acid.

The following extract from the Prussian Pharmacopœia would find but little favour in our eyes:—

"Those chemical preparations, for the making of which no instruction is given in the national Pharmacopœia, may be procured from the chemical factories and drug warehouses. The Apothecary is, however, answerable for their being good and pure. All other chemical and pharmaceutical preparations are to be made by the Apothecary himself, according to the writings contained in the National Pharmacopœia, and the latter is not allowed to prepare the same after any other method for pharmaceutical uses."

Such a pleasant arrangement would effectually destroy one-half of the business of a Druggist.

Prescriptions are also subject to a curious rule. When a Physician orders, for internal application, a larger dose of any medicine than that indicated in the Government list, the note of exclamation (!) must be added. This sign omitted, the Chemist may not dispense it without sending to the prescriber, either to add the requisite mark or alter the prescription. The maximum dose for opium is two grains; acetate of morphia half a grain; croton oil, one drop. We give the order as it stands :—

"Si Medicus medicamentorum fortiorum majorem pro usu interno dosin præscripserit, quam Tabulâ indicatum est, signum (!) addere debet. Quod si neglexerit, Pharmacopolam Medico formulam remittere opportet, ut vel denuo dosin, præscriptam pronuntiet, vel eam mutet. *Et hæc quoque jussu Regis sancita sunt.*" The German

comment on this states, that even when no accident has arisen, an omission of this kind is liable to a fine ; and when we consider the peculiar handwriting of our continental friends, it seems desirable "that caution should mark the guarded way."

There are eighteen German and Prussian Pharmacopœias, and two Belgian ones are written on the same plan. The world would not materially suffer were some kind providence to arrange, under one general head, their States, their Coinage, and their Pharmacy. They present the same external appearance, reminding one of Caxton's first attempts in printing, made on blotting-paper. The subjects are alphabetically arranged, and not divided into separate heads. Materia Medica and Chemistry go hand in hand together. This does not seem to create confusion, while it spares the necessity of an index. The scale of temperature is the centigrade, and liquids are indicated by weight, and not by measure. We hasten from these preliminaries to directly practical results, anxious to avoid the condemnation of the Divine, whose discourses produced so small an effect upon his hearers, "being levelled at a particular heretic not then present in the congregation." Ten distinctive formulæ must be noticed, without which foreign dispensing is unintelligible.

I.

GLOBULI MARTIATI PULVERATI

(Called sometimes Ferro-Kali Tartaricum).

Ferri Limaturæ, 1 part.

Potassæ Bitart,, 4 parts.

Make into a paste with water, and let it digest some time, frequently stirring and renewing the water until it turns black, and becomes

soluble in water with a dark green tinge. Let it be dried in a hot room, and finally reduced to a rough powder—to be kept in a well-stoppered bottle.

II.

CERATUM CETACEI.

Ceræ Albæ, Cetacei, Ol. Amygdal., āā partes æquales.

III.

LAPIS DIVINUS.

Cupri Sulphat., Potassæ Nitrat., Aluminas, āā ℥ij.; fuse and add Camphoræ, ʒj.

The *Pierre Divine* of the Codex is made with the same proportion of camphor to three ounces of the other ingredients.

IV.

ELÆOSACCHARA.

Sacchari Albi, ℥j.
Ol. Essent., gtt. xxiv.

These are much stronger than the French ones, which are made by adding one drop of any essential oil to one drachm of sugar.

V.

AQUA LAXATIVA VIENNENSIS.

For this celebrated compound there are twenty-nine recognized forms, exclusive of about an equal number of private ones. It is the Essent. Sennæ Comp. of the German and Prussian Pharmacopœias. The original was as follows:—

Sennæ, ℥iij.
Raisins, ℥iss.
Coriandri, ʒij.
Potassæ Supertart, ℥ss.
Aq. Bullientis, 2½lb.

Macerate one hour, and add

Mannæ, ℥viij.
Polypody Root, ʒiij. Strain.

It is now generally made according to the Berlin form:

Fol. Sennæ, ʒss.
Aquæ Bullientis, ʒiv.
Infuse for half an hour, strain and add
Sodæ Potass. Tart., ʒss.
Mannæ, ʒvj.

Whilst at Vienna, it may just be mentioned that the French Pâte, or Poudre de Vienne, is Potassa cum Calce, sold in Paris as a Powder, and by us in sticks, like Potassa Fusa.

VI.

OLEUM TARTARI PER DELIQUIUM.

Potassæ Subcarb., 1 part.
Aquæ Destillatæ, 2 parts. Filter.

VII.

PULVIS AËROPHORUS.

Sodæ Carbonat., ʒss.
Acid. Tart., ʒiij.
Sacchari Albi, ʒvij. Mix.

VIII.

SPECIES AROMATICÆ.

Fol. Menthæ,
— Melissæ, āā ʒiv.
Flor. Lavand. ʒij.
Caryophyllorum, ʒj. ℔

IX.

SPECIES LAXANTES ST. GERMAIN.

(Thea St. Germain).

Foliorum Sennæ Spiritu Vini Extractorum, ʒiv.
Flor. Sambuc., ʒiiss.
Semin. Fœnicul.,
— Anisi, āā ʒx. Mix.
When *dispensed*, add Potassæ Bitart., ʒvj.

X.

TINCTURA OPII CROCATA

(Laudanum liquidum Sydenhami).

Opii pulv., ℥iv.
Croci, ℥iss.
Caryoph.,
Cort. Cinnam., āā ℥ij.
Vin. Madeiræ (Sherry), ℥xxxviij.

Sincerely hoping that the reader is not fast asleep, which is very likely, let the entrance of a little lady, dangerously attractive, wake him up. She is very nicely dressed, her hair drawn tightly from her forehead by the force of capillary attraction, and in most winning accents she asks for Rusma. A glance discovers that the new customer is a German actress. We know that a French governess, inquiring one day in a shop at Brighton for Pavilion Parade in tones not altogether English, was told by the astonished master, "We don't keep it." To avoid a similar occurrence, we give the present form:—

Slacked lime, 7 parts.
Orpiment, 3 parts. Mix.

It is used as a depilatory, made into a paste with warm water, and so applied—although in some demand, it cannot be recommended, for it often fails.

Some difficulties yet remain, in which books of reference cease to be a guide; but a little practical experience may help us through. One is the constant use in all prescriptions of terms as unintelligible as Coptic. The following paragraph may do something to unravel them:

Aqua Florum Naphæ, is Aqua Florum Aurantii
Aqua vegeto-mineralis, is Goulard
Chloretum Ammonii depuratum, is Ammoniæ Hydrochloras
Chloretum Hydrargyri, or Mercurius Dulcis, is Calomel
Cinneres clavellati, is Crude Carbonate of Potash
Emplastum cephalicum, is Emplastum Opii
Gummi Guttæ, is Gamboge
Limatura Martis præparata, is Iron filings
Naphtha Vitreoli, is Æther Sulphuricus
Oleum Tartiri per deliquium, is Liquor Potassæ Carbonatis
Sal Amarum, is Epsom Salt
Sal essentiale Tartari, is Acidum Tartaricum
Sal Tartari, is Potassæ Bicarb. Crystals Pur.
Tartarus boraxatus, is Soluble Cream of Tartar
Tartarus depuratus, is Cream of Tartar
Tartarus tartarisatus, is Potassæ Tartras
Terra foliata Tartari, is Potassæ Acetas
Terra foliata Tartari *crystalisata*, is *Sodæ* Acetas
Tinct. Meconii or Thebaica, is Tinct. Opii
Unguentum de Nihilo, is Unguent. Zinci

The term *Mellago* should find an introduction here; it means three parts of an extract dissolved in one of water. *Mellago Taraxaci* and *Mellago Graminis* are both thus made.

We enter with becoming reverence on our last remarks; nor should we have ventured on the subject, had not Rawlinson and Layard rendered hieroglyphics fashionable.

Voltaire said of the English that they saved half their

time by half-pronouncing all their words; abroad they gain the same end by half-writing theirs. It would, therefore, be a great omission to pass over German abbreviations. *In vas. vitr. epist. vitr. claus. serv.* is a common direction, but not a short one ; unfolded it is, *in vasis vitreis epistomiis vitreis clausis serva*—put it in a stoppered bottle. *Mitte Herb. Meuth. Pip. pug.* sounds odd, but leads us to the invariable measure for herbs—*Pugillus* a pinch, *Manipulus* a handful, *Fasciculus* an armful.

Liquids are directed to be put *in lagunc.* (languncŭla, a little bottle), *in lagen.* (lagēna, a stone or other phial), in *ollâ fictili*, a pipkin, or, as we find constantly in German prescriptions, *dans un verre bouché à l'émeri*, which of course means also in a stoppered bottle.

A powder is directed in a bracket (*per cribrum setaceum trajici*), *i. e.*, to be passed through a hair sieve; and in the same way, *a quisquiliis secernendum*, to be rendered pure (*Quisquiliæ*, literally house sweepings, odds and ends). Solid substances are mentioned, *in frust.* (*frustŭla*, a little bit), *in gleb.* (*glēba*, a lump), *in taleol. sciss.* (*i. e., in taleŏlas scissa*, cut up like jujubes), dried *in fundo sartag.* (*in fundo sartāgĭnis*, at the bottom of an iron pan, literally frying-pan); *in leb. cupr. polit.*, a phrase the Oxford Commissioners might have a difficulty in making out. This means *in lebēte cupreo polito*, in a bright copper cauldron. *Charta Exploratoria* is test paper. Tinctures are to be finished *ope preli*, by means of a press. Infusions are often ordered to stand *per nycthemĕron*, *i. e.*, for twenty-four hours (νὺξ a night,

ἡμέρα a day); and *prunis injecta* is an intimation to throw the substance on live coals, not prunes (*prūna*).

Let us end with the pathetic injunction so often made, *corporibus heterogeneis ni sit inquinatum*—let it not, presumptuous Chemist, be adulterated.

To understand these contractions, habit is of more use than scholarship. German dog-Latin, like De Vere's Sarza, depends on a peculiar bark.

We had thought of giving the formula for a few Rheno-Prussian pills, but we forbear, lest haply the intelligent reader should mistake them for a wholesale order on a herbalist. To those interested in similar details, the *Dictionary of Materia Medica*, by Mérat and Lens, specially commends itself. The study of continental Pharmacy has now become an essential requisite for the English Chemist. The German is unquestionably the hardest, and if the preceding sketch has at all lightened the difficulty, none will be more gratified than the writer.

EXTRACTS FROM AUSTRIAN PHARMACY.

Pharmacy perhaps is the last thing we should expect in Austria, the home of Music, Art, and the accomplishments of polite society—a land which boasts of Vienna, the most elegant and fascinating capital of Europe, and glories in a cathedral, one of the wonders of the world, at Milan. From such a source we should least hope for grave instruction, or seek to glean materials for prosaic study. Gaiety and Science are not often friends. But, as the wisdom of a nation is said to be wrapped up in its proverbs, the French axiom may be quoted, which declares, *il ne faut jamais jurer de rien*, and the following remarks will show, that even Austria can furnish information to the English Chemist, and contribute something to the Literature of Medicine.

A review of the *Pharmacopœa Austriaca* (editio quinta) has appeared already in the Journal (vol. xv., page 92), besides which a paper bearing on Austria, entitled "Pharmacy in Italy," will be found in October, 1856. The field is not yet exhausted, and I shall endeavour to explore a few remaining points of interest.

The date of the Austrian Pharmacopœia is 1855: it is

published by authority at Vienna. Being so recently brought out, no one will be surprised that such modern articles as Collodion, Gutta Percha, Kousso, Mannite, Piperine, Salicine and Santonine are included amongst its preparations: whilst Silver Leaf, Yellow and Red Lipsalve are not thought beneath its notice. All foreign Pharmacopœias have such a strong resemblance to each other, that the present one need not be specially described—a few popular phrases claim an explanation.

1. Acidum Borussicum is Hydrocyanic Acid.
2. Æther Vegetabilis is Acetic Ether.
3. Gas Hydrothionic is Sulphuretted Hydrogen Gas.
4. Sal sedativus Hombergi is Boracic Acid.
5. Spiritus Salis *acidus* is Dilute Hydrochloric Acid.
6. Spiritus Salis *fumans* is Hydrochloric Acid.

Excipulum, is a receiver; fatiscere, to fall to pieces; gibba, a raised notch (thus in the description of the Juniper, "galbuli apice gibbis tribus notati," marked at the apex with three tufts); and sartago, is an evaporating pan.

The entire arrangement of the Pharmacopœia is alphabetical, no distinction being drawn between Chemistry and Materia Medica. Among the list of Herbs, several occur which the London Chemist is often called on to supply, without knowing the source from which the application is derived; such are Herba Calendulæ, Herba Galeopsidis grandifloræ, Herba Saponariæ, Herba Spilanthi, and Herba Tanaceti florida. The Austrian Elæosacchara are stronger than those ordered in French formulæ, being in many (but not in all) cases made with three drops of an Essential Oil to one drachm of Sugar.

The extract of Ignatia Amara, well known this side the water by advertisement, is officially enrolled, and an authorized position is awarded to the Unguentum Juniperi, which lately has been strongly recommended for external use. Scarcely any foreign recipe is met with more frequently than—

I.

INFUSUM LAXATIVUM, OR AQUA LAXATIVA VIENNENSIS.

℞ Foliorum Sennæ Alexand. ʒvj.
Aquæ fontanæ fervidæ ℥vj.
Infuse a quarter of an hour, and add
Mannæ Electæ ℥j. Strain.

Many have been the methods suggested for the Distillation of Rose-Water Some make it directly from the picked Rose petals, others distil the petals with a certain quantity of Otto, others again use Otto only ; and it has even been proposed to mix the Otto with powdered sawdust, and pass steam through the compound: in addition to these various practices some experienced Chemists are in favour of using pickled Roses; for this purpose Piesse states the best proportion to be 1 lb. of common salt to 6 ℔. of Roses, and Mr. Haselden, 1 ℔. of salt to three of flowers.

These able Pharmaceutists may not be aware that they are marching under Austrian colours:—

II.

AQUA ROSARUM.

℞ Florum Rosarum, *sale* conditorum, ℔j.
Aquæ Communis ℔viij.
Abstrahe ℔iij.

It is always useful to see how common things are made by others, for instance—

III.

NITRATED OINTMENT.

℞ Hydrarg. ʒj.
Acid. Nitric. dil. ʒij.
Solve caloris ope, et adde
Axungiæ (colatæ
et semi-refrigeratæ) ʒxij.
Mix with constant stirring.

Two formulæ must be mentioned in order to distinguish them from preparations of the same name, which occur in French and German Pharmacy :—

IV.

LIQUOR ACIDUS HALLERI, OR HALLER'S ACID ELIXIR.

℞ Spirit. Vini rectificat.
Acid. Sulph. concent. pur.
āā partes æquales.

In Germany, three parts of Rectified Spirit are added to one of Concentrated Acid.

V.

PULVIS AËROPHORUS.

℞ Sodæ Bicarb. pulv. ʒj.
Put in a blue wrapper.
℞ Acid Tartaric. gr. xv.
Put in a white wrapper.

This corresponds to what *we* should call a "Soda Powder."

How often does the Druggist receive an order for the following—

VI.

SPECIES ALTHÆÆ.

℞ Herbæ Althææ ℔ij.
Rad. Althææ ℔j.
" Liquiritiæ ℔ss.
Florum Malvæ ʒij.

Chop and mix.

Marshmallow Lozenges are thus directed to be made:—

VII.

TABULÆ DE ALTHÆÂ.

℞ Pulv. Rad. Althææ ʒiss.
" Rad. Iridis ʒij.
Sacchari Albi ʒxij.
Mucilag. Tragacanthæ q.s.

Our Trade "Pastilles de Guimauve" are said to contain Marshmallow only as a microscopic object. In the list of reagents, the strength of Solutions is often indicated, as in the subjoined example:—

VIII.

ACIDUM OXALICUM SOLUTUM.

℞ Acid. Oxalic. ʒss.
Aquæ Destillatæ ʒiv. Dissolve.

Solution of Chloride of Barium, and Solution of Muriate of Ammonia, are both of the above strength.

Lastly, the Austrian Pharmacopœia contains one English word, Arrowroot, and one French designation, Crême céleste, which latter is Cold Cream.

IX.

UNGUENTUM EMOLLIENS, OR CRÊME CÉLESTE.

℞ Ceræ Albæ ʒiss.
Cetacei ʒiij.
Ol. Amygdal. ʒiss.

Melt, and add Aquæ Rosarum ʒj.

Austrian Pharmacy stands connected in the popular mind with two empirical remedies: the first is the "Austrian Specific for Cholera." Many will recollect the marvels related of it in the daily papers, as well as the praises lavished on it by English and Foreign officers; and were we to believe one half we see in print, all fear of the Asiatic scourge would vanish. This is the recipe:—

x.

"AUSTRIAN SPECIFIC FOR CHOLERA."

℞ Acid. Sulphuric. gtt. 96.
Acid. Nitric. gtt. 64.
Mucilage ʒiij.
Aquæ Destillatæ *ad* ʒviij. m

(The original formula was expressed in Decimals.)

The second is the nostrum called Warburg's Tincture, the notoriety of which was revived in one of the longest advertisements of the *Times* paper. On examination it is supposed to be Compound Solution of Quinine (gr. vj. in ʒv.), Aloes being an ingredient; if so, the statement by Dr. Livingstone, that Quinine is most effective when given in combination with an aperient, receives a curious confirmation.

Another and stranger topic has to be discussed; for a writer would be indeed wanting in his duty who should fail to portray the actual position of the Austrian Pharmaceutist, and here I cannot do better than commence with a quotation from the sketch already mentioned, "Pharmacy in Italy:"—

"Making allowance for the national temperament, which tends rather towards music than physic, the circumstances under which

the Pharmacien is placed, are calculated to depress and paralyze, more than to develop his energy and talents."

This alludes partly to political restrictions, but principally to the existence of an all-regulating Tariff, by which the Austrian Chemist is bound hand and foot, and which determines the value of every article he has, from Sarsaparilla down to a one ounce bottle. Into such exact details does the Tariff enter, that it fixes the price of a Decoction, distinguishing between one that requires a quarter, half an hour, or an hour in boiling. The preparation of a cold or hot Infusion—straining and filtration—making an emulsion—the mixing and weighing powders—rolling out pills—covering them with flour—tying, sealing, corking, wrapping and directing medicine, have each a separate price assigned them, which must be scrupulously observed.

The effect of this limitation process is a theme open to discussion. There are some who are enthusiastic about uniformity, and would carry it, at all hazards, into a Chemist's business ; others would prefer breaking stones. When "uniformity" may be paraphrased by the word *dead level*, theory should give place to stern reality. Two corpses are uniform in one respect, they are both alike defunct. If every man had equal skill, as well as the same facilities as his neighbour, and if the commercial value of drugs remained at a constant mark, a feeble argument might then be raised in favour of a private Tariff. As it is in Austria, the public (for whose protection laws are supposed to exist) are served by a man who has neither interest in, nor control over, his own affairs; and the State, by denying personal independence,

effectually destroys that spirit of enterprise which alone paves the way either for improvement or discovery.

The further position of the Austrian Chemist may be gathered by consulting the Official Document appended to the Tariff, which is here translated from the Italian. It is published at Milan, date 1855:—

REGULATION OF THE MINISTER OF THE INTERIOR.

Dec. 22, 1854, compulsory throughout all the Provinces of the Empire, relative to the new Austrian Tariff of Medicines.

The Minister of the Interior issues the following orders relating to the new Austrian Tariff of Medicines here subjoined:—

I.

All Pharmaceutists, without exception, as well as Doctors, and Surgeons authorized to keep an Apothecary's shop (the so-called "Pharmaceutical Chest"), must, on and after the 1st February, 1855, observe this new Tariff of Medicines.

II.

Those articles which are marked with a cross in this Tariff, or in the new Pharmacopœia authorized by the Decree Oct. 20, 1854 (No. 275 in the Bulletin of the Laws of the Empire), may only be dispensed by Apothecaries to a regular prescription from an authorized Doctor, Surgeon, or Veterinary Surgeon. The other articles not specially marked may be sold without restriction.

III.

The several prices in the new Tariff of Medicines will be fixed according to the medical materials they contain, regard being paid to their quality, genuineness, purity, and manner of preparation, according to the prescriptions of the new Pharmacopœia. Medicines must always be dispensed exactly according to the directions of the Pharmacopœia, and those of the medical prescription. Whoever transgresses this rule, will incur a fine of from 50 to 100 florins in each instance.

IV.

The Tariff price of leeches will be determined from time to time for each Province by the respective Lieutenancy or provincial Tribunal, as has been hitherto customary. Those who dispense medicines for public funds will not be allowed any discount on leeches, on their presenting their accounts for reimbursement, as they (leeches) are not to be considered as medicines. All Apothecaries are obliged to be provided with leeches, and all Surgeons are authorized to have them.

V.

The Articles that the new Pharmacopœia directs to be prepared *extempore*, and which are not contained in the new Tariff, will be charged at the same rate as other forms of prescription, whenever the Medical prescription does not point out more precisely the manner of preparation, attention being paid to the formula of the Pharmacopœia with respect to the prescribed quantity of the contents, and to the different materials in their composition, in accordance with the prices fixed by the Tariff, and by the Charge for compounding Recipes.

VI.

In no case, and under no circumstances whatever, is it allowable to dispense medicines prepared from a recipe, having upon it *secundum meam prescriptionem*, or any similar observation. Each instance of this kind, as well as the sending any recipe issued by an unauthorized person, will be punished by a fine of 5 florins.

VII.

On each prescription according to which medicines are prepared and dispensed, in any public or private Apothecary's shop, there must be clearly written, in figures, the several prices to be paid according to the Tariff, for the ingredients, for the work, and for the containing vessels. If in the calculation any fractions of a carantano remain over, they may be counted in, with the addition of $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$, as the case may be, to make up an entire carantano. The sum total of the

several prices calculated in this manner must be written as the price of the medicine, not only upon the prescription, but also on the directions to be fastened each time to the medicine. The fraction of a carantano which may be left over on the sum total, may be calculated as an entire carantano. Whoever has prepared the medicine in the Apothecary's shop, must write his own name, besides the price of the medicine, on the prescription.

VIII.

Taking into consideration the exactness and precautions necessary in weighing and mixing minute doses of very strong medicines, the Apothecary, or whoever else is bound by the Tariff of medicines, is allowed to count in the calculations of the several prices one entire carantano for each fraction of a carantano which may be left over according to the Tariff, on the total number of drops, or grains of those medicines which are marked with a cross in the Tariff, or in the Pharmacopœia, as well as of those medicines which in the Tariff are charged by grains, when they are prescribed by grains or drops.

IX.

In preparing and dispensing medicines, the Austrian medical weight prescribed in the Pharmacopœia must be rigorously adhered to. Whoever transgresses this rule, will be punished the 1st and 2nd time, as for a transgression of the Tariff (12 of these Regulations), and the 3rd time will incur the penalties threatened in 478 of the Penal Code.

X.

Medicines are allowed to be sold below the charge, but in such cases there must be written in figures on the prescription, and on the direction, in addition to the Tariff price, that to which it has been voluntarily reduced. It is forbidden, under a fine of from 10 to 50 florins, to offer to the public by advertisement any medicines contained in the Tariff at a price less than is there indicated. It will of course be understood that the medicines dispensed at less than the official charge are to be of the quality, genuineness and purity prescribed by the Pharmacopœia, and are also not to be lessened in weight.

XI.

Apothecaries in general are not to try to get customers by any clandestine or prohibited means, nor by bribes. Whoever transgresses this rule, will incur a fine of from 50 to 100 florins.

XII.

Each transgression of the Medical Tariff will be punished the 1st time by a fine of 100 florins, the 2nd by one of 200 florins, and the 3rd as a violation of the Penal Code.

XIII.

Whenever a pharmaceutical assistant shall, unknown to his principal, exceed the charges fixed by the Tariff, he will incur a fine of from 5 to 20 florins, or will be punished by an arrest of from 12 hours to 3 days, so long as he has not been guilty of any action punishable by the Penal Code.

XIV.

All Doctors publicly employed, as well as private Doctors, are charged with the special duty of watching that no transgressions of the Tariff be made, and in case they discover any, they must declare them to the political Authorities,

Notwithstanding, whoever has any reason to believe that in such respects he has received an injury, may prefer a complaint before the competent authority.

XV.

Doctors, or Surgeons authorized to keep the Pharmaceutical Chest and appliances in case of emergency, must get the chemical preparations and compounded medicines which they may require exclusively from Apothecaries, and must only consent to have them from them, with small books in which they write down all the preparations, giving the precise name and weight of the medicines, and the day of purchase, confirming them with the signature of the Apothecary. Apothecaries are obliged to sell to such Doctors and Surgeons the medicines which

they require for their Pharmaceutical Chest, at 20 per cent. less than the price fixed by the Tariff. With respect to Veterinary Surgeons, the present orders relating to them are to be rigorously observed. Veterinary Medicines must never on any account be charged at higher prices than those fixed for them by the Tariff. In dispensing them, the charge for the preparation of prescriptions is not to be applied.

XVI.

Besides the above rules, regulations hitherto standing, referring to the procuring, keeping, and selling medical goods and medicines, are to remain in full force.

XVII.

The unauthorized sale of medicines for internal or external use ; the sale of prohibited drugs, or medical goods of any unknown kind ; the preparing and keeping medicines in any wrong or careless manner; the substitution of one for another, as well as the incautious sale of poison contrary to the regulations respecting it; or any negligence in keeping or separating poisonous goods, will be punished according to the Penal Code.

Date, 1855. BARON DE BACH, M.P.

After these remarks, follows the Official List of Medicines to be kept by Chemists and Druggists, with the Government price affixed to each article. The abbreviations used are :—

Fior.—Fiorino, Florin, one shilling and one penny—(like the British Silver Shilling in Jersey).

The rate of exchange is by no means constant. The Florin bears a different value in many of the Austrian and

Papal States, as well as elsewhere. In England, for instance, it represents two shillings.

Car.—Carantano or Carantino, one halfpenny.

Quatt.—Quattrino, the fifth part of a carantano—(equivalent in value to a French *centime*).

Next comes the Regulation Price for preparing Receipts, in which the weights are similar to our own (Troy). ℈iij. are ʒj. ; ʒviij. are ℥j. ; ℥xij. are ℔j.

Lastly, there is a Tariff for *Containing Vessels* (bottles, boxes, &c.), another for Reagents, and a special one for Veterinary Medicines.

Marius amid the ruins of Carthage would be a fit emblem of an English Pharmaceutist placed under such a system : like the despairing Roman, with unavailing grief he would mourn departed grandeur, and unlike him, following out the modern instinct of the day, he would be prepared to emigrate. Where would be our home establishments, shorn of their patent medicines, their private formulæ and hereditary receipts? Farewell concentrations, prescriptions *secundum meam formulam*, and west-end prices. The law forbids them, and the sorrowing Chemist must restrain his wounded feelings, for he is in a land where the Government allows no Pasma. Nevertheless, the Austrian "Regulation" has its merits—order is established, mutual trade protected, and to a certain extent the public safety guaranteed. The grand fault lies in its doing infinitely too much, and it defends the Chemist's interest much as an army guards a beleagured city, by placing it under martial law. We are not always in a state of siege.

The Englishman who visits for the first time the

gardens of Versailles, or still better the exquisitely ordered grounds of an old French château, views with admiration the trim neatness of the walks, and the faultless pattern of the flower-beds. He is struck with the quaint hedges cut into fantastic shapes, and the long avenues of trees, allowed to grow almost as pretty, though not quite as natural, as the foliage of an Opera forest—and yet when the novelty of the charm is ended, he is content to return to his own green fields and smiling meadows: and if occasionally he is caught by a bramble, or stopped midway by an overhanging bough, he is consoled by the vista of the glorious landscape, where the paths "wander at their own sweet will," and the trees wave in the free air, as God has made them.

ENGLISH AND FRENCH PHARMACY.

He would be an ingenious man indeed, who could point out two greater opposites than Cheapside, London, and the Rue Royale, Brussels: the one all dash, and drive, and bustle, the other like the Beauty in the wood —a hundred years asleep. The first, with a crowd of restless, jostling, money-making spectres; the second, enlivened by a few Belgian ladies, and an occasional tourist. Animated with a Columbus spirit of discovery, I once entered a Brussels Pharmacy—time twelve o'clock mid-day, weather splendid, London business thermometer at 112° Fahrenheit; but where, and oh where, was my Belgian Chemist gone? There stood the shop, with its great jars of Pâte de Réglisse, Pâte de Jujube, and Pastilles de Guimauve, useful but not strong remedies: there stood the rows of extract pots, blue chinaware, with bright gold labels, with the last glow of the Lowther Arcade upon them: there stood glasses with rolls of issue-peas and saccharated capsules: there stood a miniature case filled with Albespeyre's paper, Camphor Cigarettes, and Blanc de Perle. These were the only things which did stand, for in a sort of back parlour (land appeared in view) there sat the master—sat and smoked

complacently. By degrees it slowly dawned upon him that there *was* a customer, and he emerged, pipe in hand, looking something between a bandit and a Plymouth brother. The small retail order was duly executed, and he went back to his resting-place, while I returned to mine.

Let the scene change to Paris. I have a young friend an Assistant in a celebrated French establishment; while deep in conversation with him, two ladies enter. Business must be attended to—my companion, therefore, hastens to his post.

There I sat, waited, and listened while the fair customers gave a graphic summary of most things under the sun, including the new opera, the last vaudeville, the state of the funds, and the expected comet. The Lay of the Ancient Mariner was not longer nor half so pleasant. Having concluded these opening observations, they glanced at the weather generally and the public health, which latter topic led them to reflect that one object of the morning visit was to buy some physic.

These two occurrences led me to reflect instinctively that the life of the French Pharmacien differed from that of the English Pharmaceutist, at least in its external character; and being a Chemist myself, I determined to see whether there might not exist other and more special points of difference than those suggested by a superficial glance; and as one object of travel is to draw practical results from mere amusement, I thought it not idle to work out the subject, and proceed to weightier matters.

The country in relation to the country Druggist will aid in establishing a just comparison.

Every young man with a spark of ambition in him wants to come to London, because it presents a wider field of observation than can be obtained elsewhere; it allures with the chance of a first-class situation, and the strong hope of consequent improvement, besides offering the certainty of seeing and knowing more than can be expected in the narrow limits of a little town. London, too, has a School of Pharmacy, with excellent lectures, and a Museum, to which, though this is not generally known, is attached a Library. Influenced by these advantages, the countryman deserts his fields and comes to town; works very hard—stares at every Chemist's window—takes amazing notes, and has a monomania for self-culture. But no sooner has he acquired as much as he thinks requisite, than the ultimate object of his ambition is to regain the country, where he thinks, and rightly thinks, that his late experience and his London name may favour his success.

Across the Channel, the country is the last place to which the provincial Pharmacien would choose to go; not that he is spell-bound by the fascinations of the city, as Eugène Sue declares, for the necessities of life are rude disturbers of the romantic notions found in novels; nor yet that he has an insane love for the hot air and crowded streets of Paris, but because outside its walls he meets with an unexpected rival, the Religious House.

A slight explanation is necessary in order to understand the case. Before the general spread of education, the inmates of these houses were the sole conservators of knowledge, and therefore were alone capable of practising the art of healing, hence medicine and piety went hand

in hand. Such a community was a real blessing in a country town; the Convent Dispensary was a charity in the noblest sense—the nuns displayed excellent tact, and supplied good physic. But when through the length and breadth of France education became universal, a new order of things arose. The Physician first caught the genial inspiration, and the Pharmacien next. A School of Pharmacy was established, which exacted certain duties, entailed grave expenses, and conferred distinct privileges in return. As one incentive to closer application, it authoritatively declared that none could practise Pharmacy who had not obtained a first-class diploma. On the faith of this edict the Paris student hastens to the seat of learning, hires a back room in a back street in the Quartier Latin, eats one franc dinners, dreams of Oxygen, and nearly works his heart out. Up to this point the career of the English and French student is almost identical; in each case the same influences are at work; there are the same hopes to stimulate, the same difficulties to overcome, and the same goal to reach. But here Jean Jacques bids farewell to John James, and having passed his examinations with distinction, packs up his books, and commences business in a country town.

There he discovers to his horror a large establishment directed by nuns, without a title and without diploma, and consequently under neither responsibility nor guarantee. Besides this (and the statement is taken directly from an actual sufferer), in most of the principal towns "there exist Pharmacies without Pharmaciens, directed by religious communities of various orders, who, under the title of hospital, hospice, or house of charity, prepare

and sell all Pharmaceutical products to the public, and make up the prescriptions of medical men. Such a system is injurious—

"1. To the development of Pharmaceutical Studies:

"2. To the prosperity of Schools, or Faculties of Pharmacy, as well as to a great number of district Colleges:

"3. To the station and fortune of all young men who, having completed their studies, seek in Pharmacy an honourable position, sufficiently lucrative to allow them to bring up their families:

"4. To the public safety."—(*Hthe. Fortoul, Journal de Chimie Médicale.* Janvier, 1858.)

It is a bad case indeed which has no friends, and this licensed illegality finds a strenuous defender in the wholesale Paris Druggist. Hint to this worthy individual the more than doubtful wrong committed, and he will hasten to rescue injured innocence. He will show you the great usefulness of these establishments in remote towns and villages, in desolate neighbourhoods and poverty-stricken hamlets; he will compare them to light in darkness, to a well in the wilderness, an oasis in the desert; he will tell you with a triumphant flourish, how they step in where there are no drugs and no Pharmacien, and in the end, will draw such a glowing picture, that you might become sensibly affected, did you not recollect that the orator supplied the wholesale order. In Paris no religious community sells its physic, charitable institutions buy their drugs from the Pharmacien at ordinary tariff prices, and no man, under any pretence whatever, can there practise Pharmacy unless he has

obtained a diploma of the first class. Meanwhile what is the young aspiring Pharmacien to do? Should he, compelled by dire necessity, seek to establish himself in his native town, he must meet the expenses of a small business in painful contrast with an increasing family; must raise the money for his rent, taxes, and patent licence, and at the same time be prepared to battle with a huge monopoly which appeals to the sympathy of both worlds, and haunts him day and night. The dreary struggle cannot last for ever, and one fine morning there is a Druggist less. Up go the shutters.

A second point of difference exists with regard to counter-practice and the indiscriminate sale of drugs. How often do we read of a business which is recommended as "doing a snug retail with a counter-practice." It is precisely the snug retail which requires this aid the most, and many a dismal-looking shop, with its dreary bottles and dusty windows, planted in a dense and dirty population, is turning its mixtures, pills, and lotions into gold by the alchemy of counter-practice.

There are establishments in London where, I am told, there is no retail trade whatever, which are nevertheless held in much repute by the parochial Bank; and in my humble opinion a good Pharmaceutist is better than a bad Surgeon.

But let success attend the business, let it branch out and set up its plate-glass windows in the West-end, and just in proportion as the snugness vanishes, the counter-practice dies. The sale of drugs, however (like the king), never dies, understanding the word "drugs" in its broadest and most comprehensive sense. What is there

short of Prussic Acid which the English Pharmaceutist will *not* sell? What is there short of Strychnine which his customer cannot buy? With respect to such transactions, the law in France hangs over the Pharmacien like the sword of Damocles, and, however often he may escape the penalty, he is conscious of treading on forbidden ground, and fears lest at any moment he should be detected. Yet, I venture to assert, that there are not six shops in London where medical advice on ordinary casual maladies is not afforded, and that there are very few remedies, not of an absolutely dangerous character, that would be denied to a retail customer. The rule in such cases is not definite, some houses are infinitely more strict than others, but the main fact is undeniable, that both advice and remedies are given here under circumstances that would not be justified in France. Well do I recollect a long and fruitless chase after one drachm of Iodide of Potassium. It was my first and last knight-errantry. It would seem, from the following instance, that French law is as strict as ever.

SALE OF CHLOROFORM.

On the 9th of August, 1857, at nine o'clock in the evening, the Commissioner of Police, belonging to the section of the Champs Elysées, received notice that a person unknown had just attempted suicide in an hotel.

The Commissioner of Police went there, and saw in a room a man who appeared to be about forty, lying on a bed in a very dangerous state. A medical man who had just attended, prepared to take him to the hospital. The patient was scarcely put in a cab before he expired.

The unhappy man, not being able to give an explanation with regard to himself, and having no papers on him by which he could be recognized, was carried to the Morgue. An inquiry was commenced, of which these are the particulars. On the day the suicide was attempted, the individual in question presented himself at the hotel, and asked for a room, in which he shut himself up. Some hours after, the waiter, who was serving in an adjoining room, heard groans, and informed his master, who hastened up-stairs and knocked at the door from whence the sounds proceeded. It was then that they found the man lying down, and called in a Physician, who immediately detected poisoning by Chloroform. The bottle which had contained this substance was produced in evidence, as well as a bill showing the sale of 150 grammes of Chloroform by P., Pharmacien, to L., *also* Pharmacien. (To this bill was attached a prayer to the Virgin.) On this account P. was sent before the correctional police for *having, contrary to law, sold a poisonous substance without the prescription of a medical man*, or without the name and residence of the buyer. The suicide was identified, when it turned out that the name the individual had assumed when he bought the Chloroform, was not his own, but that he was a Paris tradesman.

The defence was that the individual had declared himself a Pharmacien, and his word was taken for it.

The Court condemned the defendant to six days' imprisonment, and a fine of 1000 francs.

Now, just suppose in England a man coming into a Chemist's shop, asking for one ounce of Chloroform,

with a statement that he knew its nature, properties, and use—that he was himself a Chemist, and wanted it for his own purposes; would he be denied? But in France the majesty of law is absolute, its authority usurps the place of personal discretion, and in its further interference leads us to a third point of difference between English and French Pharmacy.

Wonderfully would the English Chemist be astonished were his mediations to be interrupted suddenly by a committee of inspection. How little would he like to see the invading troop examine the contents of his shelves, ransack his cupboards, and explore his drawers. True, indeed, within the boundaries of the City, the College of Physicians, as represented by its censors, is still in the practice of visiting Chemists' shops—nor is their work superficially performed, for they carry with them hydrometers and a few simple reagents, and when anything amiss is found they cause an official letter to be addressed to the peccant Chemist; but, beyond the gates of Temple Bar, their visits are like the angels', few and far between. Let the prudential Chemist avoid the County Court, and he may make his physic as he pleases, and so long as he hurries no one to an untimely tomb, may keep the even tenor of his way. The British public are left entirely free to purchase genuine medicines at a fair remunerative price, or to have them cheap, combined with the usual adjective of nasty, and no man deludes himself as to the actual value of the article he buys, whilst, on the Chemist's part, self-interest proves the surest antidote to fraud.

When a man deliberately waters his tinctures, falsifies

extracts, adulterates drugs, and is content generally with inferior quality, the public is equally content to go elsewhere, and refuses to be dragged back even by persuasive circulars or flaming placards. On the other hand, the English Chemist never hesitates to adopt those methods of preparation which discovery, design or accident afford. If in the course of a practical, laborious life any improvement in manipulation should be suggested to his mind, he lets his experience, not his Pharmacopœia, direct him; and it is the pride of some houses (as well as an undoubted truth) that they prepare certain remedies much better than other people. No one is injured, for intelligence will, sooner or later, win the day; put a fool into an Irish bog and he will die of cholera—put a wise man there, and he will turn it into Peat Charcoal and Paraffine.

Twelve hours and thirty shillings will conduct the adventurous Chemist to another scene, where he will find a commission of inquiry in full and active operation; not a decayed, venerable institution, but a living, energetic power. The twelve hours' journey is by no means necessary, for the pages of the *Journal de Chimie Médicale* will furnish the amplest information on this point.

Here we find, for instance, in April, 1857, that "Jean Baptiste Chevallier, Chemist, Professor at the Head School of Pharmacy in Paris, Member of the Imperial Academy of Medicine and of the Board of Health (armed to the teeth with legal points and technicalities), comes down on an unfortunate Pharmacien in the Place Maubert section. Of five of the bottles examined, labelled

as containing various distilled waters, four are found filled with Aqua Destillata, and the fifth with common water. The Syrup of Quinine is mouldy, and has not been prepared according to the Codex—the Epsom Salt turns out to be Sodæ Sulphas—and two keys belonging to the poison cupboards are left unguarded, contrary to police regulations. Verdict: fifteen days' imprisonment, and a fine of fifty francs." This wholesome inspection is far from being limited to a case of fraud, for the utmost rigour of the law visits all preparations which are not made in strict accordance with the Codex. By the decision of the Parliament of Paris, July 23rd, 1748, the offending Pharmacien is liable to a fine of 500 francs. This decision was formally confirmed with regard to its penal character by the law of 21 Germinal, year XI. (April 10, 1803).

Fortunately I have before me the report of a trial at Lille, which affords an excellent example.

On November 14, 1856, a Pharmacien was seized for having sold "Sirop Anti-scorbutique," which was not prepared according to the Codex. [This is the Sirop de Raifort Composé, and is directed to be made with various leaves and roots, macerated in white wine. After two days' maceration, it should be distilled in a retort over a water-bath, and a fourth of the wine drawn over, in which half the prescribed sugar is to be dissolved. The contents of the retort should be pressed, strained, and made into a syrup with the remaining sugar; both syrups are then mixed together.]

The Syrup in question was made with an inferior wine, and was prepared by cold maceration instead of

being distilled. The defence was, that it had been bought from a wholesale Druggist; the Pharmacien was therefore cleared, and the authorities went to the right place and found out the right man.

The accused said, first of all, that he had made the syrup by a formula given in *l'Officine*, a work of Dorvault, often used in Pharmacy; secondly, that he sold it as a Drug-merchant, not as a Pharmacien; thirdly, that the law with regard to the preparations of the Codex had been annulled. The Court decided that every Pharmacien was under an obligation to have a copy of the Codex, and absolutely to follow its directions; secondly, that the penalties consequent on its infraction remained in force; thirdly, that the syrup had been made by the accused not as a Drug-merchant but as a Pharmacien, there being an express law that no Drug-merchant should either prepare or sell any Pharmaceutical product, but simply drugs; and lastly, that as the syrup sold was made otherwise than according to the directions of the Codex, the usual sentence must be pronounced—a fine of 500 francs, and costs of trial.

Were such a commission to make a provincial tour in England, would it be hailed with the words, "Welcome! little stranger!" and would the delighted Chemist illuminate in coloured lamps, choosing for his device the cabalistic sign P. L.?

Willingly would I complete the subject without venturing on the last, and greatest, point of difference between English and French Pharmacy, the use of private formulæ and secret remedies. There is scarcely an English journal, medical or otherwise, which does not

bristle with marvellous specifics and romantic cures. The language of Chemistry is exhausted to produce new terms, while one compound treads on the heels of another, labelled with a name which Cardinal Mezzofanti himself would be unable to pronounce.

With eagerness does the modern Chemist abandon the old paths of Pharmacy in haste to conjure up his fancy combinations with all the dexterity of Herr Frikell, for these are fastidious times, in which common salt is not good enough for common people, and in which even the domestic comb and brush must be galvanic. One branch of this mania for supposed discovery has issued in a nuisance—the perpetual introduction of small fiddling chemicals, which disgust the mind and overrun the cupboard. No sooner is the new compound hatched, than it is recommended, *nolens volens,* to the Physician, who prescribes it for about one week, after which brief sojourn in the world below it disappears for ever. Not content with chemicals, some quiet root in Western Africa is torn from the society of the adjacent niggers to become a Liquor; or some harmless, homely vegetable, grown near Putney Bridge, is raised to the dignity of an Extract. From the union of these forces the Chemist is duly favoured with a prescription something like the following:—

℞ Zinci Ammonio Tannat ℈j.
Liquor Peculiaris Higgens ʒss.
Aquæ Anodynæ ad ʒviij.
♏ Sumat coch ij. ampla, bis vel ter in die.
℞ Ext. Dauci Carotæ ʒj.
(Walker's.)

In pil xij. divide quarum sumat unam hora somni O. N.

April 1, 1858.

An active porter in seven-league boots is required to chase after and keep pace with the galaxy of nostrums: they are bought, however—the cost price, retail and wholesale prices duly affixed; they scarcely, if ever, repay the original outlay, and, in addition to this annoyance, there is another row of nasty little bottles for the eye to contemplate.

These are but drops in the ocean compared with the long list of advertised secret remedies—a subject too vast, too delicate, and too disheartening for me to undertake; nor would I have glanced at its troubled waters were it not to describe the diametrically opposite course pursued abroad. Nothing can be more strict than the execution of the law in France, which utterly puts down all private formulæ and secret remedies. Charity, so called, cannot smuggle in a benevolent ointment, still less can either ambition, gain, or quackery, invade with impunity the sacred precincts of the Codex. No wandering herbalist can usurp the physician's place;—no pious clergyman can commit a pious fraud, and relieve the nerves of suffering humanity for half-a-crown;—no Eastern traveller can open, gratuitously, the eyes of his fellow-creatures with his Turkish salve—please to enclose six stamps,—and no energetic Chemist can publish a weekly catalogue of novelties, and continue to receive from the profession fresh testimonials of his skill. Facts are stubborn things, let three of these stern witnesses suffice:—

L——, a herbalist, appeared before the Correctional Tribunal charged with illegal practice of Medicine and Pharmacy, and with acting contrary to the Royal Edict of October 29, 1846, by mixing a poisonous substance in

a preparation which could only be sold by a Pharmacien for medical use. He had prescribed the remedy for a woman who had cramp and colic. No sooner had the dose (two table-spoonfuls) been administered than she became dangerously ill. An analytical Chemist said that it was an ammoniacal liniment, which should only be applied externally, and which also contained a double amount of the ammonia indicated in the Codex. A medical man declared that a dose of ammonia like that given by the herbalist, taken internally, might produce serious results, and even endanger life. The facts being proved, L—— was condemned to ten days' imprisonment and a fine of 200 francs.—(Jan. 1, 1858.)

At the same time and place, P——, a Pharmacien, was charged with having sold a secret remedy to which he gave his name. This remedy was announced to the public by an immense placard attached to the shop-windows, on which was inscribed the following notice:—"A gratuitous distribution of Balsam P——, for the cure of wounds, ulcers, burns, tetters, &c., takes place for the poor every Saturday and Thursday, from seven to eight o'clock in the evening, at the Pharmacy of the inventor, under the special and gratuitous direction of a Doctor of Medicine of the Faculty of Paris." P—— was condemned to a fine of twenty-five francs.

Pommade B.

A seizure was made a short time ago at the establishments of the makers and sellers of the Pommade B., brought forward as a remedy for fleshy excrescences, gatherings, burns, wounds, ulcers, large boils, and corns.

For this, Messrs. B—— and V—— were sent before the Correctional Police. B—— is much surprised that an action should be brought against him *now* on account of the sale of a pommade which has been sold peaceably for the last fifty years, from father to son, the recipe being a secret in the family. It is precisely because it is a secret that the Court condemns Messrs. B—— and V—— each to a fine of fifty francs.

See, lastly, how affairs are managed in that quiet old city, Antwerp. "The Pharmacien-in-Chief of the Hôpital du Midi, M. Personne, twice Prizeman (Lauréat) of the Paris Pharmaceutical Society, and author of many important chemical researches, presented himself before the Antwerp Pharmaceutical Society as a candidate, and was rejected. The advertisements in the papers of Personne's Iodized Oil were the sole cause for this exclusion. Honour to the Pharmaceutical Society for having, in so striking a manner, given a lesson of professional dignity to all these specialists and advertisement-mongers who spring up (pullulent) in Paris."—(*Journal de Pharmacie Anvers*, Dec., 1857.)

Now we are in a better position to arrive at some definitive conclusion with regard to English and French Pharmacy. Both systems have their merit. The first relies on commercial honour, the second on minute external regulations.

To these latter may in part be attributed that curious, apathetic, easy manner, which characterizes our foreign brethren, and which never fails to arrest the attention of a stranger. The man who is hemmed in till he scarcely feels his soul his own, is led to treat external circum-

stances in a somewhat philosophic manner. How far in England such a plan would answer, it is not for me to judge; I think, however, that it would hardly suit our national temperament.

This, at least, may be granted, that without the agency of legal interference, there is no more diligent, accurate, or scrupulously conscientious man, than the English Pharmaceutist; nor do I believe that in any other profession, trade, or calling, there is an exhibition of a more continuous, unwearying, microscopic application than in an English Pharmacy.

CHEMISTRY IN ITS APPLICATION TO PHYSIOLOGY AND THERAPEUTICS.

BY DR. MIALHE.*

THE work before us brings with it the recommendation of a well-known name and an attractive title. Its design is to show how far the various changes constituting what is called Life, may be attributed to definite chemical reactions, reactions as certain, as well determined, and as clearly demonstrated as the operations of the laboratory. Viewed in this light, the word *vital* is exchanged for the term *chemical* phenomena; the task of the author being first to assert their right to the appellation and then to explain the laws in obedience to which they act. Two objections instantly suggest themselves, the one imaginary, the other real. Are we to suppose (it will be urged) that the same mutual decompositions as are observed in the lecture-room actually take place in the human frame? Is not this altogether to lose sight of those modifying influences that must exist in the body? No, certainly, for as in elementary chemistry no one would describe phenomena irrespective of attendant circumstances, so none but the

* *Chimie appliquée à la Physiologie et à la Thérapeutique.* Par M. le Docteur Mialhe, Pharmacien de l'Empereur. Paris, 1856.

superficial would imagine the same transformations occurring in man as in a retort; but we are not on that account ignorantly to shrink back from the attempt to discover what is the special chemistry of existence, what is the action of the controlling energies of vitality, and what the ultimate result determined by these characteristic forces?

The second objection is the danger arising in all such speculations, of denying, making light of, or passing by unacknowledged the first cause of life itself, and great as must be the admiration excited by this treatise, the reputation of Mialhe would not have suffered had his opening statements contained one line of recognition of that higher power which is beyond the grasp and above the comprehension of even "the Pharmacien to the Emperor."

The following sketch will give some idea of the intention of the volume:—There are two fundamental conditions of life, Oxydation and Nutrition, or, in other words, air and food. The phenomena of Oxydation take place wherever the blood penetrates after its absorption of Oxygen. Some substances are directly oxygenated, such as alcohol, the volatile oils, and albumenous bodies; some indirectly, as the neutral hydrocarbons (Glucose and Fatty Matters), which do not absorb Oxygen, save under the influence of the alkaline fluids of the system; while some resist its action altogether, as Gum and Mannite. Whatever momentarily interferes with Oxydation must be dangerous, whatever does so permanently, fatal. Chloroform and Sulphuric Ether act by displacing the Oxygen of the blood and arresting its combustion. Hence the most rational way

to counteract asphyxia resulting from anæsthetics, is to inhale Oxygen. Hydrocyanic acid annihilates the intra-vascular combustion, and produces instant death.

But whilst Oxygen is a destructive agent, the functions of Nutrition are constantly repairing the waste of Respiration. The substances necessary to be assimilated undergo peculiar transmutations by means of the Saliva, the Gastric juice, the Bile, &c. These changes (as Dumas has shown) are purely chemical, and constitute what is called Digestion.

The alimentary substances have been divided by Prout into three classes:—1. Vegetable matters, or hydrocarbons—Sugar and Starch. 2. Nitrogenous bodies—Albumen, Fibrine, Gelatine, and Gluten. 3. Fatty matters—Fats and Oils. The first class are assimilated by means of the active principle of the Saliva, Diastase, which converts the starch into Dextrine, and finally into Glucose. Diastase is found also, though in lesser quantity, in the Pancreatic juice; and so powerful an agent is it, that one part by weight is sufficient to liquify and convert into dextrine and glucose more than 2000 parts of fecula.

From regular chemical deduction it is shown, that Glucose is in its turn decomposed by the alkalies of the blood, becomes transformed into new substances alone capable of absorbing oxygen and combining with it; it then undergoes a veritable combustion.*

* Ainsi, la glycose n'a point la propriété de s'unir directement à l'oxygène, elle doit être décomposée, transformée en substances nouvelles, qui seules sont propres à absorber l'oxygène, à se combiner avec lui; et ces transformations ne peuvent avoir lieu que sous l'influence des alcalis libres, ou carbonatés.—Page 66.

Shall we turn aside for a moment from theory to a great practical result? It will be found in the treatment of Diabetes, that disease of hope against hope, with its unnatural thirst and consumptive weakness. Here the Glucose is *not* decomposed, but unassimilated is rejected by the secretions.

The cause of this disturbance is the want of sufficient alkalinity—the remedy is to restore what is deficient. Give alkaline carbonates, *Eau de Vichy*, Bicarbonate of Soda, and recommend moderate exercise, and open-air employment. One successful attempt to cure what has often been the incurable, will prove that the most practical men are those who are not afraid to speculate with sense.

Having ascertained the nature of the Saliva, the influence of the Gastric juice comes next under consideration. This, too, furnishes an active principle—Pepsine. By its means Albumen, Caseine, Fibrine, Gelatine, and Gluten are assimilated. Pepsine, therefore, is a functional agent as old as the first man, and has now the honour of adorning an advertisement as a patent medicine.

PEPSINE.

"The method pointed out by Vogel for obtaining Pepsine is the following:—Take the mucous membrane of a pig's stomach, cut it in little bits, and wash with cold distilled water. After twenty-four hours' contact, decant and pour a fresh quantity of water on the pieces. This operation is repeated several days, until a putrid odour is discernible. The watery infusion thus obtained is precipitated by Acetate of Lead. The white flocculent precipitate which results contains Pepsine, together with much albuminous or caseine matter. This precipitate, well washed, is suspended in water, through which

is passed a current of Sulphuretted Hydrogen. On filtering the liquid the caseine matter remains on the filter with Sulphuret of Lead, whilst the filtrate contains the Pepsine with Acetic Acid. By adding to the filtered liquor a sufficient quantity of absolute alcohol an abundant whitish precipitate is obtained, which is dried in the air—this is Pepsine. It must undergo two or three fresh watery solutions, filtrations, and alcoholic precipitations, in order to obtain it in a purer state and free from Acetic Acid."—Mialhe, *Chimie Appliquée*, page 100.

Pepsine has no action on Starch; it coagulates milk and the albumenous substances in general in the presence of a slight proportion of acid, dissolves this coagulum, and transforms it into *albumenose*, which bears the same relation to albumenous bodies as Glucose to the Starches.

Pepsine possesses also this well-marked chemical characteristic, that it is destitute of transforming agency apart from the previous action of an acid. This acid is furnished by the Gastric juice, and has been maintained to be Acetic, Butyric, Lactic, and by Prout, Hydrochloric acid; perhaps, indeed, it may be a combination of them all. Its function is, to convert albumenous substances into a gelatiniform mass. This mass is then acted upon by Pepsine, rendered soluble and capable of assimilation, the ultimate result being in all cases *Albumenose.*

The morbid conditions of Albumen, as seen in Cholera, or Bright's Disease, as well as the action of Albumenose, in its healthy functional state, are accurately delineated by Mialhe, but belong more to the Physician than the Chemist; yet, let it always be recollected, that it is the

latter who has been able by his art to point out a rational mode of practice.

Unhappily, the exact method of the assimilation of the last class, the Fatty Matters, has not been satisfactorily determined. The Bile was formerly considered the principal agent. M. Bernard has announced a peculiar active principle which would complete the series, but Mialhe gives his reasons for rejecting it. The present idea is, that these bodies are converted into emulsions by means of the alkalies of the Pancreatic juice, and in that state are capable of assimilation; whilst from the experiments of Matteucci it follows, that Fatty Matters, to become capable of absorption, should not only be in a state of emulsion, but should likewise have an affinity for the liquids impregnating the organic membranes. It will be unnecessary to linger over a theory adopted by Mialhe with regret to be abandoned at the first sign of a better one.

These general and important considerations lead to the great doctrine of Absorption. From the anatomical structure of the vessels of circulation all absorption must be endosmotic; consequently, nothing but substances in a liquid or gaseous state can penetrate; hence those solids which do not come under the influence of agents capable of liquifying them, are *not* absorbed, according to the old axiom, *Corpora non a gunt nisi soluta.*

Solids, contrary to the opinion of Orfila and Œsterlen are rendered active in proportion as they are rendered soluble. Not only should substances be liquid, but they should retain this liquid state while in the organism; for if they combine with the membranes, or form an undis-

solved coagulum, they become unfitted for absorption. At this point Mialhe relinquishes theory and commences at once an intelligent examination of several well-known bodies, points out their action, and gives a practical insight into the real value of Chemistry in its association with Therapeutics.

Carbon meets with little favour, for there is nothing in the body capable of effecting its solution; its action, therefore, such as it is, is purely mechanical, and must remain so until some experienced Chemist can exhibit it in a soluble form. But Sulphur surely must share the same fate, since common opinion considers it insoluble, yet the experience of every day demonstrates its medicinal value. All are aware that persons under its influence cannot rid themselves of its pervading odour, and that it even blackens any metallic substance they may wear. The truth is, as the theory would induce one to suspect, that it *is* soluble in the alkaline carbonates of the liquids of the digestive tube, and is transformed partly into Sulphuret, partly into alkaline Hyposulphite. If this be true, Sulphur should be poisonous to animals the juices of whose digestive organs are naturally alkaline ; and so it is, 500 grammes are a poison to a horse. This leads to what Mialhe calls a Rational Formula; that is, one based on ascertained chemical facts. If Sulphur becomes absorbed by means of alkalies, the best thing is to prescribe it in association with them ;

℞ Sulphur. Loti, ʒiv.
Magnes. Carbon., ʒiv.

M. in pulveres xviij. divide—j. quotidie sumend.

A good illustration is afforded by the success of the celebrated compound—

POMMADE D'HELMERICH.

℞ Sulphur. Sublimat., ʒv.
Potassæ Carb. Exsiccat., ʒiiss.
Adipis Suillæ, ʒiiss. M.

This portion of the subject is so multifarious, that a few selections of opinions, especially belonging to Mialhe, must suffice. Shades of Orfila! Arsenic is not poisonous in a metallic state, nor is it so, until by the absorption of Oxygen (favoured by the presence of an alkaline chloride) it is transformed into Arsenious Acid. Neither are the natural Sulphurets of Arsenic (Realgar and Orpiment) poisonous in themselves. This remark does not apply to these compounds as found in commerce, which contain an enormous quantity of Arsenious Acid. The harmless character of the native Sulphurets has an important result, namely, that the Hydrated Sulphuret of Iron is the best antidote in case of poisoning by Arsenic, as well as in poisoning by the salts of Tin, Lead, Copper, Antimony, Bismuth, Mercury, Gold and Silver, whose deleterious action it annihilates.

HYDRATED SULPHURET OF IRON.

"The antidote to all metallic poisons (with the exception of Cyanide of Mercury) is the Hydrated Sulphuret of Iron. Having no deleterious action itself, it precipitates Arsenious Acid, the salts of Zinc, Tin, Lead, Bismuth, Antimony, Copper, Mercury, Silver, Gold, and Platina, in the state of insoluble Sulphuret. All Chemists' shops should constantly keep on hand a substance capable of neutralizing so many poisons, and that in so complete a manner. It is obtained easily, and in any quantity, by precipitating a solution of a salt of protoxide of Iron by an alkaline protosulphuret in solution.

Care must be taken to wash the precipitate with distilled boiling water, and to keep it from exposure to the air.

"Let us add, that when it is associated with Calcined Magnesia, a combination which we were the first to propose (and the advantages of which have been fully set forth by M. Duflos), it can be used as a counter-poison to all the acids, to the compounds of Cyanogen, and even to the Cyanide of Mercury; that is to say, that it then constitutes the counter-poison *par excellence*, a veritable general counter-poison."—Mialhe, *Chimie Appliquée*, page 538.

The pecular action of Alum is remarkable. In small doses it coagulates and is astringent; in large doses the coagulum is dissolved, and Alum so administered renders all the albuminous matters that it meets with more than ordinarily fluid. Without the knowledge of this fact, the Chemist or Physician might in their anxiety to hasten a result, take the surest method of preventing it.

An elaborate notice is bestowed by Mialhe on Magnesia, Iron, and Mercury. Three kinds of Magnesia are described: the Calcined variety of the Codex, which is soluble in weak acids, and very soluble in concentrated ones; its distinctive character is, that when *recently* calcined it remains fluid in water, but that in twenty-four hours, on becoming hydrated, it forms a solid mass. The second variety is a Hydrated Magnesia of English manufacture, not carbonate, very light, very soluble in acids, and remaining liquid in water. It loses on calcination twenty per cent. of water. The third variety is the well-known Henry's Calcined Magnesia, which is heavy, permanently liquid in water, scarcely soluble in weak, and sparingly soluble in strong acids. This Magnesia very slowly and very imperfectly solidifies the Balsam of Copaiva. Passing over all other details, three

valuable hints have been pointed out by the chemistry of Magnesia:—1. A strong objection has been urged against it that it forms solid deposits in the system which often become dangerous. This may arise from its being administered in improper combinations, which produce insoluble salts. But it has been seen that Caustic Magnesia *naturally* solidifies on becoming hydrated, hence this variety should never be given in large doses, whilst the best and most reliable Magnesia is one thoroughly hydrated. 2. Magnesia is soluble in acids, and is then capable of assimilation, hence the wisdom of exhibiting it with Sugar, part of which being converted into Lactic acid, greatly promotes its action. 3. In testing Copaiva, care must be taken in the choice of the kind of Magnesia used, Caustic Magnesia being the only one adapted for the prompt and complete solidification of the Balsam; many specimens of Copaiva, considered as bad (and rejected as such by purchasers), have been unjustly thought so, because the Magnesia employed in the analysis was hydrated, and consequently unfit for purposes of estimation.

A few scattered extracts would hardly do justice to the admirable sketch of the Iron series. Three general conclusions are, however, too interesting to be omitted:—1. All preparations of Iron (soluble, or capable of becoming so under the influence of the acids of the Gastric juice), susceptible of being decomposed by the alkaline substances contained in the blood, can be used with advantage in the treatment of organic affections which require the use of Iron. 2. All preparations of Iron (soluble, or capable of becoming so under the influence

of the acids of the Gastric juice), *not* susceptible of being decomposed by the alkaline substances contained in the blood, can have no advantageous action in the treatment of organic affections which require the use of Iron. 3. Amongst the insoluble compounds of Iron used in medicine, simply divided Iron and the Carbonate of the Protoxide are the most reliable ; and amongst the soluble compounds of Iron, there is none superior, if any equal, to the Ferri Potassio Tartras.

Mercury must be left with one remark. All mercurial preparations used in medicine produce during their stay in the human economy a certain quantity of Corrosive Sublimate, to which alone their therapeutic and toxicological effects are owing. Children, therefore, whose food contains little Salt, can bear a larger proportional dose of Calomel than adults.

Here these selections from the work must end, bearing in mind the ominous warning of the title-page—"The Author and Editor reserve to themselves the right of Translation." The last section, devoted exclusively to "Pharmaceutical Studies," would suffer by a too scanty notice. It is hoped, however, that enough has been advanced to show that the reader is in presence of an original thinker, with a fertile theme. In relation to subjects such as these, praise or blame would be equally out of place. Here are experimental facts produced and inferences drawn. If the facts can be shown to be incorrect or the inferences erroneous, no skill of a reviewer can save them from oblivion. The verdict rests with the future. The student at least should be grateful to Mialhe. In his hands Chemistry ceases to be a mere

list of decompositions and affinities, learnt as a task, to be forgotten in disgust. In a moment it is a science instinct with interest; the abstract merges into the practical, and some of the strangest phenomena of life are explained. To those who deem such considerations beyond the Druggist's sphere, we commend the careful reading of these pages—not in the cold formality of a correct translation, but in the expressive elegance of the original. Happy will be the event if it issue in a due appreciation of our friends on the other side the Channel, and in our being better able to assert our claims as competent, because Philosophic Chemists.

DALTON.

THE story of successful genius is, in nearly every case, the same ; either a resolute will, warring with external hindrances, and finally prevailing; or a creative power, turning the common advantages of every day into the stepping-stones of fame ; or, as in the case before us, the patient, untiring energy of a thoughtful mind, concentrated through life on one great object.

John Dalton was born at Eaglesfield, in Cumberland, where he went to a village school until eleven years old; at twelve he took the lead himself and taught the others, though it seems his lessons were received with little reverence by the pupils, who varied their studies now and then by challenging him to fight. At fifteen he went to Kendal, to assist his brother at an establishment "where youth were carefully instructed in English, Latin, Greek, and French, also writing, arithmetic, merchant's accounts, and mathematics." Here he remained twelve years, relieving his more prosaic duties by answers to the queries of the *Gentleman's and Ladies' Diary.* These were not always strictly scientific, for Mr. William Gradidge asks, "Whether to a generous mind is the conferring or receiving an obligation the greater pleasure ?" At this period he became acquainted with Mr.

John Gough, a blind philosopher, of whom Dalton says, "There is no branch of natural philosophy but what he is well acquainted with; he knows by the touch, taste, and smell, almost every plant within twenty miles of this place; he can reason with astonishing perspicuity on the construction of the eye, the nature of light and colours, and of the optic glasses." From this rustic sage he learnt Greek and Latin, and though they often quarrelled, he was indebted to this intercourse for his first real interest in the pursuits of after life.

Following Gough's example, he commenced his observations on the weather, his first entry being a notice of the Aurora Borealis : he made a rude barometer, thermometer, and still simpler hygroscope, collected and dried plants, observed the changes of insects and caterpillars, as well as arranged specimens of butterflies. There is a period in every man's life when he becomes disgusted with his present pursuits, and sighs for something better; so Dalton longed to change his school for Law or Medicine. His uncle, however, was accustomed to speak his mind, and thus addressed him :—"As to the two professions of law and physic, if thou wishest to be at the head of one of those professions, that is, to be at the bar, or to be a physician, I think they are both totally out of the reach of a person in thy circumstances. If thou art tired of being a teacher, and wishest to change it for some more lucrative or agreeable employment, and couldst be content instead of becoming a physician or barrister, to move in the humbler sphere of apothecary or attorney, thou mightst be able, with a little capital and great industry, to establish thyself in one of these."

The expected change was never made, for he continued at his old avocations, until he became the Mathematical Tutor of the Dissenting College at Manchester, with which place his name is inseparably connected.

The rest of his life belongs not to narrative, but science. How he commenced his meteorological investigations, including the Theory of Dew, the Force of Steam, and Atmospheric Law in general, wrote an essay on the Vision of Colours, founded on his own peculiar eyesight; a treatise on English Grammar, and the New System of Chemical Philosophy, the result of his numerous studies; how he fell in love, and wrote stanzas to an Æolian lyre; how finally he became a great man, was chosen President of the Literary and Philosophical Society of Manchester, lectured at the Royal Society in London, and went to Court, having in the mean time changed the aspect of modern chemistry by his discovery of the Atomic Theory; all this, and more, the excellent sketch by Dr. Henry* best discloses.

It was Dalton's misfortune to have been only associated in early life with those whose position and general attainments were inferior to his own. Fortunate is it for most men of genius that their intellect has been the ready passport to the society of those from whose example, as well as discoveries, they have been infinite gainers, without in any way forfeiting their own individual excellence. It is wonderful that Dalton, struggling for an existence as a village schoolmaster, accomplished

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* *Memoirs of the Life and Scientific Researches of John Dalton.* By W. C. Henry, M.D. Printed for the Cavendish Society.

what he did. As a self-made, self-educated man, he has the highest claim to respect, but his fame would have suffered nothing had he been better acquainted with the views of others, and had his manners caught a little of the refinement of general society. A new world opened before him, when, after having declined an appointment for the Polar Expedition, under the command of Sir John Ross, he was elected a Corresponding Member, and subsequently a Foreign Associate of the French Académie des Sciences, in consequence of which he went to Paris. There he was introduced to its various celebrities, including Arago, Humboldt, Cuvier, La Place, and Gay-Lussac. The stranger who has once visited the splendid galleries of the Jardin des Plantes, will share the delight of the unassuming Englishman, as he wandered through a collection which has no equal in the world.

It is pleasant also to read, that like many another sage, Dalton was charmed with Baron Cuvier's daughter Clémentine, whose exquisite and universal amiability lent a grace to her father's universal fame. "Why is it," asked the wondering damsel in a meditative mood—"why is it everybody loves me?" "I suppose," said the great naturalist, "the reason is, that you love everybody." In these days of over-work and railroads, the following extract, showing how they dine in Paris, may prove a slight relief:—

"At four in the afternoon, by a coach with Dalton to Arcueil, La Place's country seat, to dine. Engaged the carriage to wait for our return at nine. On alighting, we were conducted through a suite of rooms, where, in succession, dinner, dessert, and coffee-tables were set out; and onwards through a large hall, upon a terrace, commanding an extent of gardens and pleasure-grounds. There was a

sheet of water in front, and a broad spreading current pouring into it from some rocks, where was seen a sculptured figure—an antique —found in the locality, representing the genius of the place. It is in these grounds that are still remaining the principal Roman works near Paris—the vestiges of Julian's residence, as governor of Gaul. Avenues, parterres, and lawns, terraces, and broad gravel walks, in long vistas of distance, are bounded by woods and by higher grounds. As yet we had seen no one, when part of the company came in view at a distance: a gentleman of advanced years and two young men. Was it possible not to think of the groves of the Academy and the borders of the Ilyssus? We approached this group, when the elderly gentleman took off his hat and advanced to give his hand to Dalton. It was Berthollet! The two younger were La Place's son and the astronomer royal, Arago. Climbing some steps upon a long avenue we saw at a distance La Place walking uncovered with Madame Biot on his arm; and Biot, Fourier, and Courtois, father of the Marchioness La Place. At the front of the house this lady and her grand-daughter met us. At dinner, Dalton on the right hand of Madame La Place, and Berthollet on her left, &c. Conversation on the zodiac of Denderah and Egypt, Berthollet and Fourier having been in Egypt with Napoleon, the different eras of Egyptian sculpture, the fact that so little at Rome—of public buildings—is earlier than Augustus, &c. After dinner again abroad in the beautiful grounds and along the reservoir and aqueduct of Julian. These ancient works, after falling very much into decay, were restored by Mary of Medicis. Dalton walking with La Place on one side and Berthollet on the other I shall never forget. Such men, in their personal attentions, respect in each other the dignity of science itself—the great interpretress of nature and leading star of civilization; something which is beyond the honoured individual, which yet attends him, impressing a sense of homage that is elevating to him who feels it. La Place is an uncommon union of simplicity of manners and an essential dignity of character. His collected and serene air realizes to the observer the tranquillizing influence of philosophy. We may well conceive that such a man feels for the interest and honour of science something like a religious regard.

At the Institute a few days before an instance of behaviour in La Place was a striking exemplification of this remark."

But a little while ago, Manchester, in the midst of its roar of business, beheld a goodly specimen of beautiful old age. A guileless citizen, with not one stray thought beyond Philosophy, was calmly working out his abstract reasonings, heedless of tall factories or sudden wealth. His home was in the laboratory, where he repaired every morning to light the fire and dust the pupils' desks; then, after a frugal breakfast, back again, ready and willing to commence his daily lectures. The spirit of worldly policy was not strong within him, for his instructions were given for the moderate sum of half-a-crown an hour, or eighteenpence when two attended. There sometimes he would busy himself in manufacturing an unfailing remedy for coughs and colds, made with treacle, liquorice, and vinegar, explaining its sovereign virtues to an admiring audience.

No one could be more said to keep the even tenor of his way, for he dined at one, took tea at five, finishing the labours of the day at nine. This patriarchal existence was varied every Thursday by a game at bowls, which he pursued with an amusing ardour; but the main characteristic of the man was that transparent honesty, which made him as scrupulously exacting in his requirements from others as he was upright in his own conduct towards them. Thus he refused a certificate of attendance, until he had repeated in full the missing lecture for the applicant's sole advantage. Such traits of character, as well as his curious aversion to books and general

literature, belong to the pleasant recollections of the past. Let us not, however led away by even the prettiness of circumstance, for a moment lose sight of Dalton's real claim to honour, namely, his discoveries in science. A popular sketch necessarily shuts out the exhibition of those careful, minute, deeply-studied investigations, to which all original philosophers owe their reputation.

Those who would wish to penetrate a little beneath the surface, cannot do better than consult the concise, intelligible Essay on the Atomic Theory, by Dr. Henry, given in the middle of the work. As Dalton's claim to priority of thought has been occasionally denied, it is as well to see what were the views entertained on the subject previous to his time, how far he availed himself of the anticipations of others, and to what extent he may be fairly credited with working out for himself the great doctrine on which his life was engaged.

Time was more favourable to Dalton than to another great mathematician, Hutton, who has recorded his opinion in his autobiography that it produces nothing but rags and children. The quiet Friend fared better in his generation: the Royal Society elected him a Fellow, Oxford gave him her honours, Chantrey a statue, and the Government a pension, whilst his countrymen regarded him, even in his lifetime, as a sort of patron saint.

Now that the grave has claimed him he may rest in peace, without the fear of his reputation being snatched away by the spell of the euphonious name of Higgins.

A man who spent the energies of a whole career on the elucidation of one sole object, could not be said to

have *blundered* on the atomic theory, any more than the enthusiast who should walk on a pilgrimage from here to Manchester could be said to stumble on the high-road.

Self-taught, Dalton succeeded in spite of himself, for his philosophical instruments were of the rudest description, and his hands were not equal to his head; but for original, deep thought, united to a child-like simplicity, he will not soon be forgotten.

Dalton, like Sir Isaac Newton (to whom he bore a strong mental and personal resemblance), disbelieved in genius, a misconception sometimes incident to real greatness, but one most readily pardoned in the case of those whose life is the best refutation of the theory. It is true, indeed, that the marvellous influence of steady perseverance can be alone estimated by those who practise it, yet still there is a barrier which nothing but directing and creative power can pass.

Untiring industry will rescue the dullest mind from mediocrity, but there is an Excelsior which it cannot reach. Many a mountain shepherd has watched the changes of the atmosphere far more than Dalton, but unlike him, in vain; whilst many another inconsequent observer might have viewed the falling of an apple, from the first one that tempted Eve, and been no wiser.

It remains only to congratulate the Cavendish Society on the publication of this interesting memorial of a "Famous Chemist," and we may be allowed to express the united feeling of the Members in conveying our thanks to Dr. Henry for the singularly happy manner in which he has fulfilled his task.

ON THE DISCOVERY OF PHOSPHORUS.

(Date 1669—1680.)

"Whether the Phosphorus Chemicus be good for something in physick, is yet a secret; many learned great men, that have not too great faith in Chymistry, hold it only for a curiosity, and say, if the Chymists had not found out the Phosphorus, they would have had but little or nothing new to show that is extraordinary." So writes Ambrose Godfrey Hanckwitz, in a pamphlet called *Historia Phosphori et Fama;* and how this new agent was discovered, it is the object of the present notice to explain. Godfrey himself, just at this period, had had bitter experience in the pretended skill of an alchymist, who contrived to live for more than a year at his expense. This worthy had been sent over from Holland by the Hon. Robert Boyle (Godfrey's master) with a commission to work out his grand experiments in the laboratory at Southampton Street, the whole of which were to be carefully reported at stated intervals. The result was very simple; he was boarded in the house, had a good salary, and did nothing. Therefore, when the first reports arose of a "new self-existing fire"—and the alchymists praised it in lofty and mysterious phrases—we are not surprised to find that Godfrey despised the

men, and ridiculed their methods. "It is no wonder that few, or the fewest of them cannot produce it, for in truth and fact it is not a work for gentlemen and cabinet Chymists; but there is required for it an operator well versed in fires, to whom its mechanick and manipulation is well known. To me as an operator are these their high and subtile notions too strong, and I believe I must only make phosphorus still all my life for them." But there was a greater man in the field, and this was Brandt. "This honest man now gave himself before others the greatest trouble, without doubt many years, to find the key to the door of the garden of the Hesperi*dums*, and has erected himself for that purpose a vulcan office in the city of Hamburgh, only the right bird of Hermes would not be catched." He made many experiments on the subject, but as Godfrey very properly says, "he should have remembered the old story, 'Oh! King, what thou seekest is in thyself.'" A delicate way of expressing that phosphorus should be made from urine.

But Brandt did not wander long, and was enabled to produce "a dark, unctuous, dawbing mass," which was the first exhibition of phosphorus. Into what raptures discoveries like this threw the world at that primitive time, the following passage will show:—"When now such like noble motives, made that good old man, Brandt, to broil and to sweat much more by his excrements, one may easily guess how much at that time the whole heaven of Hamburgh did hang full of fiddles, as he brought forth out of it a lumen, which, in the world, is counted the most perfect agens intrinsicum. There was then cried nothing but triumph and victory among the

Chymists. Those good people erected already in their thoughts so many hospitals and poor houses, that no beggar should ever more molest any man in the streets, made great legacies, and pious causes, and what not else."

A new light had evidently been thrown on the subject, and they made the most of it.

The alchymists joined in their congratulations. Their views on the matter were rather peculiar. "Besides the other alchymists did encourage him yet more, and desisted not to make him believe how this was that same fiery ghost of Moses that in the beginning moved upon the water, yea his splendid shining face: the fiery pillar in the desert, that secret fire of the altar wherewith Moses burned the golden calf, before he strewed it upon the fire, and made it potable." The first person who gained any knowledge of the new production was Dr. Kraft, who gave Brandt 200 dollars for a specimen, "for him to make remonstrances thereof to princes;" and next Kunckell. Both these two made it. But up to this period it was totally unpresentable, "because the unctuous dawbing oyliness was not yet accurately separated from it, and without doubt it was very stinking, and therefore unpleasant," until Boyle gave directions to his Chemist, Mr. Bilger, to produce it, and then to put it into the hands of Godfrey to prepare it for him. But Godfrey "had heard of battles," and long before Mr. Bilger could give him his instructions, sent one ounce of pure "right glacial," as we have it at this day.

This present Boyle received "with much satisfaction," and well he might, for although all that had been made

had been praised on every side, and the Duke of Brunswick had performed experiments with it in presence of the renowned Leipnitz, "whom this new lumen did enlighten in such a manner, that he wrote extraordinary Latin poems upon it;" still (says the contented Hanckwitz), "the same with our solid prepared phosporus was no more to be compared to ours than chalk to cheese, for that of Brandt remained only in such a confused form together, as a chaos." Godfrey now made a tour through Holland, France, Italy, and Germany, to discover something new about "that marvellous lumen." But nowhere could he find anything prepared like his own, not even in France; for "had not France two renowned Chymists, the learned Homberg and Mons. Lemeric? And notwithstanding the French nation is of great ingenuity, activity, and penetration, yet we find not in their writings, nor by private correspondence, this fine product in quantity: nay, not at all that I can hear of." The conclusion to be arrived at is certainly this, that Brandt was the first to discover phosphorus and Godfrey the first to make it. His studies were not fatal to his health, for he died at the age of eighty, and bequeathed the light of other days as a legacy to his sons.

Of the exact process by which it was produced there is no mention made in any of Godfrey's accounts. His son seems to have felt an hereditary horror at divulging the important secret, as the following passage will show: "As to the phosphorus made of urine called Kunckell's, we have it described by the Hon. Mr. Boyle, Mons. Homberg, and others. But I shall beg to be excused for not discovering the process how I prepare it, or from

giving any farther light into its production than what was done by my father before the Royal Society, in the year 1733. Because I am now the only person in Europe, or at least in England, that can produce any quantity of it. And since it is a matter of curiosity, amazement, and diversion, more than of service towards the preservation of health of mankind, I am still the more excusable to conceal my method and to keep it a secret, that I may have the reward due to me, for discovering a better way of preparing it, and also for my trouble and expense, which is not a little." Cautious and quiet old gentleman —had he lived in later times he would have vended it as a patent medicine, and left the receipt to his widow, as a sort of soothing syrup. Fortunately, thanks to the old engraving on the subject, and the original furnaces, we are not much in the dark as to the mystery. It was prepared by slowly evaporating urine down to the consistence of honey, and submitting this to distillation in a retort enclosed in a brick furnace ; it was subsequently purified as follows : "In the rectification of phosphorus the neck of the retort should be covered with tin, in order to retain the heat, and its nozzel should be immerged in water, and occasionally a little inflammable air should be introduced into the retort to prevent absorption of water, which would infallibly burst the vessels. The air is also useful, being one of the component parts of phosphorus. Four parts of phosphorus, and one of charcoal thus distilled makes phosphorus."

It is more than strange that a discovery which evidently caused so great a sensation should have led to so few practical results. For although many uses are as-

signed to it in books, its actual employment is very limited. Phosphorus is no longer at our fingers' ends in matches, and as a safe remedy in fevers, nervous affections, hemorrhage, and gout, it has almost passed away. It need not be stated that the mode of its preparation was long since changed by Pelletier, Fourcroy, and others. I believe, after all, its greatest efficacy is displayed in that celebrated compound phosphorus paste. To this I can add my personal experience. We have a kitchen, a fair average specimen, being a happy medium between the choleraic and the grand. The floor was thick with beetles, in one compact black mass. But following the guidance of the Journal, little pellets of the paste were strewn about, and the next morning the whole colony had disappeared ; all but one solitary individual, who seemed deep in thought, and was possibly musing on the danger of venturing out to evening balls. But there is one application of phosphorus, now considerably revived, which should not be omitted, namely, in the treatment of the insane. The difficulty consists in its solution, and some excellent remarks on the subject may be found in the *Journal de Pharmacie*, October, 1834. Two forms are given :—

Phosphorus, gr. iv.
Sulphuric ether, ʒj.

II.

Phosphorus, one part
Olive oil, thirty parts.

The essential oils are said to dissolve it, in the proportion of six grains to an ounce, but one thing must be

guarded against, none of these solutions are permanent.

After repeated trials I find that one grain to an ounce in oil, and two grains to an ounce in ether, &c., can only be relied upon. Most persons know the prescription of the author of *The Fallacies of the Faculty;*

℞ Phosphori, gr. ss.
Ol. succini, ʒss. ♏

Still the only reliable solvent for phosphorus is chloroform. Surely any plan to alleviate the miseries of the insane must possess the deepest interest, and it is worth a trial to endeavour to alter the sad state of one so aptly described by the poet:

"A wandering bark upon whose pathway shone
All stars of heaven except the guiding one."

MATTHEW ROBINSON.

A.D. 1628.

"*Le Médecin malgré lui.*"

The Spanish proverb says, "Old books to read; old wine to drink; old friends to meet." Great is the pleasure of welcoming old friends; of old wine I can give no opinion, as I so seldom get it; but privately I respect the venerable Spaniard, who has mentioned first, Old Books.

The Autobiography of Matthew Robinson is one of these. Fortunately part of his history relates to Physic, and affords a curious illustration of ancient Pharmacy.

Unlike some scholars of a later date, he was a sort of genius while a child; "and such was his ripeness of wit, that before he was nine years old he could translate any English into true grammatical Latin, and construe any familiar author. His father perceiving it, took pleasure in trying him with curter and more difficult Latinists, as Terence and Seneca, and did admire to see how the boy would nick off the very sense of difficult passages, wherein others, three or four years older, could do nothing." Being sent to a higher school, "the holidays and playdays were to him desirable for no other end but

that he might be at liberty to read what he list; and by this course he was familiar with every poet and every poetical expression, so that he might have passed for a Laureat ere he was thirteen years of age." His father, "a stout and popular gentleman," died, and his mother was persuaded to send her son to Edinburgh. This was the inglorious time of the civil wars, when Cromwell amused himself with hunting Royalty. Learning was at a discount, arms triumphant, or, to use the expression of the age, "the tents of Mars were more frequented than those of Minerva." Matthew Robinson, however, reached Edinburgh in safety, and began his studies in October.

In February next year the plague broke out, and the students hastened home. "His mother gladly received her son, though much Scottified in his habit and language. Neither was he one day idle at home, but read over at leisure his tedious notes, yet much longed to go to the English Universities." Therefore he set off for Cambridge, not by the Eastern Counties Railway, but mounted on a sorry horse. On the first day he and his companions were chased by robbers. Next day he came to a garrison town, where he was kindly received by the governor, but "appointed to such a mean quarter, that he could take no rest for swarms of night enemies" (the nature of which the Chronicler does not leave to the imagination). He now made for Peterborough; but the very night of his arrival the troops came in, and, by a simple process of displacement, Robinson turned out, and finally, after some adventures, reached Cambridge safely. Entered at St. John's College, he was placed under "the tuition of that darling of men, Mr. Zachary Cawdrey.

The tutor doted on his new pupil, and he on his tutor; and to his study then he fell."

Scarcely had he settled to his new pursuits, before the king's army (Charles I.) marched before Cambridge. The students flew, Robinson amongst the rest; but being three times dragged back by the peasants, he determined to fight like an honest man, mounted guard at the Castle by night, and continued his studies by day. The wonderful narration of his varied diligence must be passed over. When next we meet him, he is "out of love with College life," and expecting nothing but ruin to the Church by the present times, he betook himself from that occasion to the study of physic. After having witnessed the trial of King Charles, following the English fashion of the day, he was bent on going to Padua as a Doctor, but College interest changed his prospects, and he became a Fellow. "Being thus posted to his own desires, he fell to the perfecting all his former studies. The one he mainly pursued was Physic, his intended profession, and therefore proceeded in drugs as he had done in herbs, and in all Pharmacopœias, acquainting himself with Apothecary shops, and the nature of compounded medicines, and chemical experiments; and in Anatomy he was the most exquisite inquirist of his time, leaving no anatomist unread, nor secret unsearched; insomuch that he was invited by some learned persons in other colleges, many years his senior, to show them vividisections of dogs, and such-like creatures in their chambers, to whom he showed the whole history of the circulation, the venæ lacteæ, the cutting of the recurrent veins in the neck, with many experiments then novel, to great satis-

faction; and no augur ever was more familiar with bowels than he, every week having some singularity or other of this nature to search in." These pursuits were not destined to last for ever, for, says the record, "it pleased the most wise God (whose counsels designed him for better employ), to give a sudden check to this his career in medicinal studies, by the vacancy of a church living in his native country, belonging to his family, the presentation whereunto was left to him, as his chief portion. This he thought the greatest affliction that had ever befallen him, to leave his present paradise, and change his course of life and studies: yet the importunity of his mother and dearest relations called him down, and would receive no naysay." The delicate allusion to the profession will not be overlooked, nor when one's mother and one's interest row in the same boat, is the result difficult to foresee. Robinson yielded quietly to his fate, and at the age of twenty-three forsook medicine for divinity. But there is a French proverb, quite as good as the old Spanish one—"On revient toujours à ses premiers amours." And so strong was the ruling passion in him, that the times being "turbulent and factious, so that all sober men judged that it was a deadly crisis, prognosticating nothing but the ruin of both churches and universities, he then sold all his household stuff, and fully prepared in two months' time to resign his living to a worthy and pious divine, his neighbour, and betake himself to the College again, and his last reserve, the study of physic." Such hopes were never realized—once having entered the ministry, his conscience would not allow him to reject it: with a noble

disinterestedness he gave up his fellowship to prevent further temptation, and became "a right textman and practical preacher." Now for the strangest part of the narrative, showing how dangerous is reputation—the public *would* be physicked by him, and the following is the account of a practitioner *nolens volens*, from the original manuscript.*

"He was no sooner settled in his place, but he met with a great diversion to his ministerial employ, for not only friends and relations, but many others well knew that he was brought up a Physician, and therefore consulted him often in their distempers and infirmities; and though he could not peremptorily decline such importunities, yet he did with much modesty answer their desires, yet still referring them to the advice of more experienced Physicians for many years. But his name being once up, he could not continue himself longer in that privacy. Among many gentlemen thus applying to him was Sir Joseph Cradock, the Commissary of the Archdeaconry of Richmond, who often consulted him for himself and family with great success; but finding him shy and nice in writing bills (*i. e.* prescriptions) or anything that looked like a professed Physician, he sent to him under the seal of the office a license to practise physic, that he might not have any excuses longer, and this proved to him a great unhappiness. For he was sent for by some dukes and peers, with many baronets, knights, and great men upon the like account; some of whom (as being at too great a distance) he absolutely refused, others he was induced to gratify, that of friends he might not make them enemies. Insomuch that in short time, he had but little time left him to his own studies, being three or four days per week, and often more, carried unwillingly abroad to visit patients. In his medicinal practice he had prodigious success, especially in the checking and curing of consumptions (being well instructed from his own hectical constitution, as well as from books): and in that he had a peculiar

* *Autobiography of Matthew Robinson.* Edited by J. E. B. Mayor, M.A., Cambridge.

method of his own, known then to few, or none, but such as after took it up from him. No man had a steadier judgment of pulses and patients, for he could see danger at a great distance, and rarely missed in his prognostications, and therefore, in all such cases, he pressed the counsels of abler Physicians. And though he refused to undertake the cases of many patients, seeing them desperate, he never denied any to join in counsel with the most learned Physicians of the land; often reporting those odd cases of patients even to the College of Physicians, by a polite Latin pen, whereof he was a great master, as well as of the Latin tongue."

One more extract will complete the scene:—

"But his concerns still growing upon him, both at home and abroad, he was very weary of these avocations given him by patients, studying all honest excuses to shift them off, yet could he not fairly rid himself thereof for twelve years, till it pleased God, about the fifty-fourth year of his age, to give him a writ of ease." This was a painful malady, which "prevented him from walking, coaching, or riding," and which, by setting him free from his professional labours, at last restored him to the Church.

This wonderful man united in himself many seemingly anomalous characters—though learned, he grew rich; though rich, profusely liberal. He was a noted judge of horses, an accomplished sportsman, and a celebrated divine—how excellent a Physician has been seen already.

A light that shone so brightly in the seventeenth century, deserves not to be forgotten altogether in our own.

[*The three concluding Papers relate more particularly to the condition of the London Chemists' Assistant.*]

STUDY.

Half the intellect of London has reached the capital with a few shillings and a carpet-bag. Its great writers, statesmen, merchants, adventurers of every kind, down to its great Chemists, travelled on the same stage-coach. Family distress, narrowed opportunities, and sometimes actual want, have been the best heritage of many of our illustrious men. It is for us with a laudable ambition to follow their example, and to act in our turn as they have done before; in furtherance of which object a theory is offered, and its practical results worked out, addressed exclusively to those Assistants who have little time, no competent advisers, and no friends. Such an one on first being introduced to the subject, would infallibly remark, "These excellent discourses read very nice on paper, difficulties surmounted make great men, but I am nothing but a Druggist's assistant; I have early and late hours, while my time is not my own. The tide of fortune might roll my way in vain, for I have business to attend to, pills to roll out, and physic to make up. Besides, I have a strong notion that retail Pharmacy contracts the mind; drugs and success in life form no amalgam. If some good friend would kindly leave me

a legacy, or people have no medicine after eight o'clock, I might perhaps then read a little, do something, and improve." Of course after this statement you naturally feel better, so now will you just let me give you my quiet mind. What makes success? and who are the men who gain it? Every one knows who fail. Give a man plenty of time and sufficient money, and he will in general make no use of the first, and waste the second. Great natural opportunities, an easy access to society, friends, a crowd of teachers, a ready-made position involving no struggle, and no anxiety, shut out for ever the most distant hope of extrication from such a Capuan luxury. It is a fatality to be born with white kid gloves. To this there are bright exceptions, but so few that they only prove the rule, nor do these remarks apply to hereditary rank, where habitual cultivation and contact with elevating circumstances produce noble specimens to the contrary. The past is the great teacher for the present, nor is there a more consoling thought, than that what man has done, man may do. Physic has not the contracting influence you imagine, an assistant like yourself, while in a suburban district, managed to become as brilliant in literature as he now is high in law.

So much for intellect. Infinitely more to the purpose it is to know, that those who never left their original calling, succeeded in it with no greater advantages than you possess. The names best known are the most appropriate illustrations, though personal mention would be both invidious and indelicate. All first-class Chemists' establishments are now so interwoven and associated with daily city life, that each separate firm, with

its owner and reputation, seems part of the current course of events. But there was a time when these very houses were not in existence. Their directors were hard-working, persevering, determined assistants, with not a tithe of the advantages of the present day. Education had to be dug up. The scanty Latin of their youth was mystified in an unintelligible grammar, which has only been swept away within the last few years. Greek was considered a language well adapted to the Athenians, and an austere schoolmaster who taught for his salary, was not likely to awaken a strong interest in general knowledge. After this pleasant commencement, the young beginner was apprenticed to a Chemist, because his parents thought it *such a nice clean business;* accordingly, the Tyro found himself immediately smothered up to his eyes in white, red, and blue paint, not unlike the clown at Astley's, happy to present himself to society, not too redolent of varnish, and having escaped the oil-can on the one side, and the black-lead on the other, allow a comprehensive apron to cover all deficiencies for seven long years. He then came to London. No institution taught him anything, no good and cheap books instructed him. There were museums for surgery, anatomy, and geology, but none for him; there was less time than there now is, and rougher work. What then? The battle of life was before him, and he won it. Success, almost barricaded, was carried by assault. Fame was not an heir loom in the family, it was gained slowly but surely. The shop, though draughty enough in all conscience, was never favoured by some special gale from heaven which swept in the cus-

tomers, advertised the drugs, and improvised a reputation, yet somehow or other the new house and its owner by degrees gained itself a name, passed into a household word, and became as well known as St. Paul's Cathedral.

Study was the talisman which wrought the enchantment. One hour a day devoted for three years to regular, uninterrupted, systematic reading would enable you to reach the limits of your ambition. Three years! what an age! But unimproved or not they *will* go all the same, so why not make the best of them in passing? The sole question is, can you get one hour? Such is the internal constitution of some houses that it is quite impossible. On this subject we are fearful of being led astray by temporary excitement, which would gain no object, but simply create annoyance. We believe it to be the interest of none but the gas companies to commence business before the day-dawn, and protract it beyond the dead of night. It is the interest of masters to have the cordial sympathy of their assistants, and not their unwilling services. It is the interest of the public to be served by an intelligent being, and not by a spectral incompetent. It is the interest of the assistants to have the requisite time for improvement here, and the opportunity for attending those sacred duties which are to fit them for hereafter.

Now for a few practical details:—Ten pages can be well read in one hour. "Why bless us all, I can read fifty without the slightest trouble—thirty at least." In "bless-us-all gentlemen" we have little confidence; the first month finds them at work like a steam-engine, the second at the bottom of their beds. They are like those

remarkable young ladies who *learn* French in three months, pick up Italian on their way, and take German at a hand-gallop—a process which causes a slight embarrassment to the respective natives.

Adopting the decimal system, a short tabular view may tend to enlighten the subject. One month contains in round numbers thirty days, consequently ten pages every morning would be 300 pages a month, from which the following *average* result might ensue:—

Pereira's Materia Medica . .	1900 pages. .	6 months.
London Pharmacopœia . .	550 " . .	2 "
Christison's Dispensatory . .	950 " . .	3 "
Thomson's Dispensatory . .	1150 " . .	4 "
Brande's Chemistry . . .	1500 " . .	5 "
Turner and Liebig	1250 " . .	4 "
		2 years.

The whole of these are books of general reference.

Supposing that one hour would only master six pages a day of Chemical works requiring more than ordinary attention, then 180 pages would be read each month, and 2160 pages in the year, which would include the following :—

Fownes' Chemistry	550 pages.
Gregory's Outlines	560 "
Royle's Materia Medica . .	700 "
Fresenius' Analysis	350 "
	2160

Nothing remains to make this table accurate but to correct for pressure of time and density of head.

It will not be supposed for a moment that the mere reading of these books will constitute a well-grounded acquaintance with their contents, the list only shows that there is a possibility of accomplishing far more than is generally supposed in a very limited space of time. Few, indeed, would have the courage to drag through some of the ponderous volumes enumerated, nor would the herculean task be advisable. Such calculations are necessarily imperfect, though useful, as there may be interfering circumstances, over which there is no control: sickness will sometimes throw its shadow over the brightest hopes. It may be a fancy, but we have always felt the toilsome nature of unassociated Chemistry, and therefore suggest the following plan :—

Allow one hour, every other day, to the consecutive continuous reading of *one* outline work, by which means you would triumph over 150 pages a month, and 1800 pages in the year.

It is desirable not to pore over the same manual too often, after having once carefully perused it, but to commence another, which, though treating on the same subject, is expressed in different words. There are few introductory treatises of more than 600 pages each.

At the same time it is well to know that an occasional dip into one book, varied by a short reading of another, a snatch of Brande, a glance at Daniell, a look into Fownes, and a general survey of Gmelin, Parkes, or Faraday, will consume the same amount of time, and lead to nothing.

No one can hide from himself the absolute necessity at the present day of being acquainted with at least the

elements of French and German. The two languages have become of trade importance, to say nothing of any intellectual enjoyment they may afford. That time will be well spent that is devoted for three alternate mornings to the hard study of the first. Now our imaginary assistant looks unwell, and delivers himself as follows:—"Yes, very good, if I had learnt it at school, but they taught nothing there but Latin, of which I only recollect the first page of Cæsar's Commentaries. It would cost two or three guineas a quarter for a master, and I should be ruined in grammars, dictionaries, and books of reference; besides which you can never persuade me that I can learn French in one hour a day." No, very likely not, but you will soon convince yourself of that important fact. Perhaps you have seen the title of a pamphlet, "Plenty of work and how to do it." The *modus operandi* is as follows:—Buy a Cobbett's Grammar. Read it through and through until its chapters are burnt into your mind, and when the excitement of a new impulse ceases, wade through its dreariest details with untiring energy. London is a wide place, containing all sorts of people, so there is no difficulty in meeting with Frenchmen as acquaintances. More could be learnt from them in casual intercourse than by any other means. From hence you cannot move a step without a teacher; no very alarming undertaking, as the slightest arrangement with two or three others similarly disposed would secure his services at a trifling cost, while to those living in the City, opportunities obtrude themselves unsought. Having gone thus far, Devotion would suffer little were you occasionally to attend the services of a foreign church.

The first year closes, during which a good insight into Elementary Chemistry has been gained, as well as a tolerable advance into the rudiments of French. Union is strength, and on this principle some book should occupy h e second year which contains the best combination of Chemistry, Pharmacy, and Materia Medica; of which perhaps there is no better specimen than Pereira's *Elements.* If it be possible, borrow it; if not, club together and buy it, for it must be had. The three alternate days still remain for disposal. For the second year it would be an useful variety to allot one hour a week to German, the other two being claimed by French as usual. One of the best Grammars is by Dr. Tiarks, price six shillings; but Dictionaries, Manuals, and all sorts of foreign books may be picked up for a very little at a bookstall. Personal reserve is the only hindrance to companionship with some of the numerous resident Germans. Need it be mentioned that the best aid to study is at your own disposal. Buy any foreign work and its English version, then constantly translate and retranslate alternately from one to the other, correcting your attempts afterwards by the book in hand. Children's books are not to be despised; they are at first of greater service than Racine or Schiller.

The prospect brightens as the drudgery of elementary study is gradually left behind, and on the third year it would be no presumption to enter at once on those works in which the first principles of Pharmacy are carried out to their legitimate application, such as Watson's *Principles and Practice of Physic,* or Bowman's *Practical and Medical Chemistry.* Perhaps now is the best opportunity for understanding and tracing out the different

preparations included in the various Pharmacopœias, for which the summary presented by Mr. Squire will be no small assistance. The two languages may also be studied together, but by this time they will have become an integral part of reading, not a separate branch. To gain this point will amply compensate for the hardships of the struggle, nor can we express a kinder wish for the student than the inheritance of such joy, recollecting that a contented mind is a continual feast. *All this may be realized by one hour's daily application.* Botany has been intentionally omitted, as it requires for its right study ample leisure and out-door speculations. To those who have time at their own disposal, who have free access to museums, libraries, and lectures, and are surrounded by the appliances of learning, these remarks may seem absurd; but they are intended alone for those who have very scanty time and most limited opportunities. Weary, indeed, beyond description, is the manual occupation of ignorance. Can there be a harder fate than with an empty mind to associate with a row of monotonous bottles, a gas-jet, and unmeaning implements of coction? If you but knew the heaven you could create within you by this practice of habitual study! Knowledge turns the meanest circumstances into sources of enjoyment; under its influence the solitary chamber brightens up, the charm of the Casino fades, and an inward satisfaction finds its expression in acts of good-will and courtesy in daily life.

STUDY.

(SECOND NOTICE.)

I ONCE ventured to make a few suggestions with regard to study—the attempt proved successful, and the practical result obtained was beyond my anticipation.

The subject is one of extreme difficulty, chiefly because it is so very easy to write generalities which read remarkably well and lead to nothing; and so very hard to contribute thoughts of actual value, expressed in the plain language in which everybody thinks.

Two things go to form a Chemist:—the knowledge of his business, and a fair acquaintance with Latin, French, and German. He *can* keep a shop, and get through the world without such aid, as a man *may* hobble with one leg, though there is an advantage in his having two.

But here, even on the threshold, a strange hindrance bars the way. When first the student has ceased to think with hatred on the drudgery of school, and wakes up to the reality of life, he enters on his career with almost unnatural energy ; that is, if there is anything at all in him, for some go mentally to bed for ever. At this turning-point the companionship of one real friend is worth more than riches; should such a friend, sitting by the fireside, tell him, from personal experience, that

that which will make his business, gain him a position, and save him from himself, is study, his mind fires at the thought; the spark of ambition is lighted up within him, and at once, energetically, not to say frantically, he sets about his work. It does not do to trust in spasms. Other influences interfere, but they are trifles light as air, compared with the disastrous action of a change of mind. Yes, sooner or later this will happen. The novelty of study is no more—a calm begins little by little to steal upon the student; interest fades by slow yet sure degrees; the same subjects fail to suggest the same ideas, until they are at last gazed on with a dull and listless eye; while at this critical juncture some good friend is sure to whisper, "shut your old tomes, and come to Evans's."

Nothing, perhaps, is more unfortunate, than that the student at this disheartening period should meet with one of those very proper, well-meaning essays, on the value of education. These praiseworthy sermonizings effectually extinguish the faintly-flickering flame, for nothing can persuade the student but that the path pointed out is not one destined for *him* to enter; that his capacities are unequal to the task; and that the field of study with its future hopes and present joys is reserved for others more fortunate than himself. Therefore it is of the deepest importance that he should know that this unwilling apathy falls, some time or other, to every one; and while the fit lasts, not all the argument under heaven will affect the case. One course alone is open.

Even when the page is driest and most wearisome, let

him still go on—the darkest night will have a morning, and sooner, a vast deal sooner than he thinks, light will shine out upon the drudgery, and he will have gained a power of which he never before was conscious, and which no man possesses who has not passed through the struggle. The best way to surmount a difficulty is to meet it.

This leads to the second point. Exactly a year ago, I tried to prove that late hours were not the most favourable soil for studious habits; whereupon five letters made their joint appearance in the *Pharmaceutical Journal.*

Three advocated the claims of a compulsory examination, and one, on the theory that whatever is is best, recommended the assistant to gather the stray crumbs that might chance to fall from the well-stored mind of contiguous wisdom, and, aided by the crumbs aforesaid, learn to be content. But there was a concluding letter (vol. xvi., page 387) written by Mr. R. W. Giles, so true, so sensible, and withall so just, that had I not personally known the author, I should have been astonished.

The tenor of his remarks is this. The assistant, once in business, should have ceased to study, and begun to practice—it is not when the soldier is in battle that he should learn to drill. Moreover, the scanty preparation of a necessarily interrupted course will never fit him either for an examination or for his after duties, since the neglect of years is not to be compensated by the application of an hour. With this I cordially agree, but it regards the subject in a different point of view from that in which I placed it.

Sorry should I be to depreciate, even apparently, the

value of the Diploma of the Society—it was my sole endeavour to convince the assistant of the extreme personal gain of personal study. Nor can I see why he should be deterred from that which is within his reach, because he cannot grasp something which may be beyond it. True, indeed, the Society's Diploma can scarcely, with rare exceptions, be fairly won, save by a preliminary well-directed education; can that be a reason why a whole army of Chemists' assistants should stand with their hands before them, and say, "Circumstances have made me a donkey, and I will remain so?"

Thus, advancing step by step, theory gives place to practice, and even at the risk of sharing the reputation of "single speech Hamilton," I must once more make the assertion, that the regular employment of one hour a day can accomplish wonders. Unhappily, in the case of the assistant Chemist, Habit is far more at fault than Will—the first thing, therefore, is to acquire the mastery of habit, and to wake up a dormant interest.

Certainly the way to effect this is not to commence with a Latin Dictionary and the Pharmacopœia. I believe sincerely the best method of bringing the mind into a proper tone of feeling, is to attack a foreign language. Its study brings with it instant satisfaction, each word acquired is something gained—to use a trade simile, it is cash on delivery. Not to weary with a thrice-told tale, may I be allowed to offer German as a good beginning; and as it will form the only illustration, a few words of caution may not be out of place.

(1.) Whatever system professes to teach without a master, or ventures to express the prounciation in written

characters, should be avoided. No living language can be learnt without a living master, and were only two or three to meet together, the most moderate salary would be equal to the expense. (2.) Those systems which teach entirely without grammar, seem to me to lay a great tax on the memory without any adequate result. By this method, a rapid conversational ease is soon acquired, which by the least want of practice is as rapidly forgotten. There is no principle to guide the choice or use of words. The theory is that we should learn a foreign language as a child does it own mother tongue—but we are *not* children; the mind is crowded with a thousand other things, while the poor infant has only got to cut its teeth, and to acquire its speech. A directly contrary opinion, however, is maintained by some competent authorities, particularly by Capt. Basil Hall. (3.) Those systems which teach a language by misspelt sentences, and purposely incorrect exercises, are a practical mistake. Error is imbibed quickly enough without hastening after it by a special train. (4.) A cheap and useful system is that called *The Practical and Easy Method*, by F. Ahn.

Asking allowance for these details, I am satisfied that the moment there is the smallest progress made in this pursuit, a new bias of thought and feeling is established—an eagerness hitherto unknown begins to spring, and the assistant grows discontented with himself; the brightest era in his life. Soon he becomes absolutely ashamed to have let one year after another pass with nothing but regret to mark their flight. The charm begins to work; and, as day by day the mechanical toil of study lessens,

slowly, yet surely, he gropes his way from the dreariness of rules and grammar into the welcome light of literature.

Nor is it with a careless hand that I have selected German—admirable as a study, not only because its rugged syllables enshrine some of the loveliest and most airy specimens of imaginative writing, together with those famous lyrics, which not to know is to be exiled from the world of taste; but also because it is the language from which—proud as we are as Englishmen—three-quarters of our modern Chemistry has to be translated.

But here a rather far-sighted person rises to remonstrate. "My good sir! your patent assistant should learn his doses, and not be reading Schiller." Respected individual! The great task was to create an interest, no matter what; to break up the nothingness of an aimless life; to inspire a wish for something higher and better—this once accomplished, the man is a changed being, of which the first symptom is that he will begin to respect himself, and be too proud to allow apprentices to collect Herbaria while he rests ignorant and helpless, and not another week will pass which will not find him deep in Pharmacy, and dreaming of Richard Phillips.

I ask every assistant Chemist in London whether the reward does not warrant the attempt? whether the result be not at least as satisfactory as the certain end of a three years' course of Casino, and Half-price? and lastly, whether the consciousness of undoubted self-advancement be not worth something on its own account and for itself? But so long as the delusion lasts that nothing should be ventured where there is no chance of grasping all, and that knowledge is only so far useful as

it secures a title, the usual sickening apathy will enshroud the assistant's mind, never to be dispelled, until in due time he is drifted into some monotonous marine store in the country, and forgotten. One hour's work each day will save him—one hour's application will put him beyond the fear of status—one hour's uninterrupted daily reading will raise him above Tom Thumb, though it may not make him Faraday.

Now, does any assistant in London mean to say that such are the exigencies of his business, and such the nature of his occupation, that he cannot reserve one hour, that is sixty minutes, in the day, for his own purposes? It is within the range of possibility that such a place exists. May the spirit of Christmas come upon the master.

EDUCATION *versus* TRADE.

THE examination of a school upon some patent principle is one of the ordinary sights of London, almost a too familiar scene to need description. There stand the boys drawn up in appropriate phalanx, unusually clean and silent, while there the anxious faces of the girls betray the galvanic pitch to which they have been wrought up for the occasion. Of the boys we say nothing, but devote our sole attention, as in duty bound, to the young ladies. The Government Inspector has come down upon them like the wolf on the fold, and the mistress depends on his approving smile whether she may receive three pupil teachers and thirty pounds additional. The casual lady-visitor, educated in the good old times, when systems as the Glasgow, Borough Road, Westminster, or National were unknown, is lost in wonder, whilst a little girl, not much higher than the form she sits upon, details with faultless accuracy her views upon Comparative Zoology, and is deep in the mysteries of Quadrumana. Quick as thought a class goes through a course of Mental Arithmetic, and shows if an odd number of things at a fractional price came to an amount you couldn't remember, how much would another odd number, at a different fraction, come to?

Variety is charming, so the teacher *takes them on* Geography. Forthwith comes the catalogue of rivers, mountains, valleys, capitals, and the whole selection of useful knowledge, that is usually forgotten after leaving school. History receives its due, Ancient, Modern, and Sacred; but the grand climax, the English Ultimatum, is without question, Grammar. Not your common Lindley Murray, but a refined arrangement based upon the science of language, which depends upon the subject, copula, and predicate, with other enigmas easily discovered by reference to any government manual. Happy is the word rejoicing in its simple Saxon origin, derived from neither Latin, Greek, or French, its only guarantee to peace and quietness; for what school-girl of this century does not know that reference is derived from *re.*back, and *fero* I bring; government from *gouverner*, and manual from *manus.* Now what are these poor children meant for? Surely such a system, with its new tastes, habits, and refinement; its range of subjects, and even with its superficial science, is intended to fit them for the higher walks of life; but the astonishment of the visitor is at its height on discovering that it is to make them, what they never will be, household servants. We suggest to the accurate pencil of the Pre-Raphaelites the subject of the model housemaid, with her broom in one hand and her Geography in the other, mechanically sweeping the carpet, and mentally the surface of the globe. Helpless personage! she can neither sew, nor buy, bake, brew, manage, cook, or wait at table. Education some years ago was at a stand-still—now it has gone mad; but the day will come when reason will

regain her throne, and sensible plans be adapted to right ends.

It has been said that the Pharmaceutical Society entails the same melancholy consequences, namely, that by refining upon education it unfits its admirers for the ordinary routine of business; that no one so trained can possibly become a good Assistant or a successful Master. His inclinations will be at warfare with his trade. Conversazionis, meetings, chemical researches, diligent reading, and practical experiments will tend to enlarge his mind and shut his shop.

The fallacy is here; while in some public establishments an exclusive attention is given to pursuits in themselves at variance with eventual duties, in the present instance mental cultivation is the mainspring of success hereafter—business itself depends upon the constant application of the facts acquired; ignorance is here not bliss, but ruin. Some years ago houses of great reputation were select and few, there are more now for definite reasons. The secret of such reputation has been in every case the same; their owners knew far more than their business, bringing to bear on daily details the results not only of experience, but scientific skill. No sophistry can set aside this fact. Let a man with a self-fatal casuistry once persuade himself to the contrary, and the result is sure; a doubtful mediocrity will be his highest prize—the world and all that is within it will roll on without him. A river is a pleasant sight, old men and children like it (and there must be something real in whatever unites the sympathies of both ends of life). Nevertheless, a man wise in his generation, places a wheel midway in its course; that wheel supports

the industry of ages, and yet the river sparkles on as ever. Science is the wheel over which the wise Chemist lets the tide of business roll: the same science that charms the Royal Institution, keeps his wife and family, pays all his debts, and works the world's prose into the poetry of home enjoyment. Applied talent constitutes success.

The question involves a minor fallacy. Not even Hufeland's *Art of Prolonging Life* can keep men from the grave for ever. A new generation carries on the labours of the past. There is the shop with its bottles, drugs, and ready-made reputation. Customers roll in, orders multiply, while carriages with titled occupants wait at the door. No need of education here! exclaims the fortunate successor; what has been will be. No it won't. The skill that raised the place from nothing must sustain it, or it will prove another version of the Coming Struggle, and fall like Lucifer, outshone by other lights.

Although it may be possible for an old establishment to linger on, supported by its previous fame, the directing energy of a well-educated mind is the commencer's solitary hope. What earthly prospect is there else among the blaze of endless competition? We have a theory that a shoemaker not only should make boots and shoes, but be a judge of leather; that a wine merchant should be competent to choose his wines; a baker be a connoisseur in flour; a tailor a good judge of cloth; a butcher able to select his beef and mutton; and we think also, though it is a hazardous assertion, that a Chemist might know something about his drugs.

There are philosophers amongst us who think otherwise, imagining that Science and the Gazette go hand in

hand together. Why then do visitors from town rejoice in the fresh country air, but carefully avoid its physic, and would rather trust in a kind Providence than doubtful preparations? There is an excellent opening yet for any one who, having more faith in applied Chemistry than in Venetian Red, shall combine real knowledge and manufacturing ability with the usual occupations of a Pharmaceutist. But the Philosopher just mentioned knows much better—books are books, and trade is trade; he minds his shop while Dilletante sages talk; which, when translated into English, reads as follows: A. B. begs to assure the world that he has lately commenced upon his own account. He is a thoroughly practical man, who understands his business, and knows nothing.

Let us leave trade to say a few words about the traders. It is more than strange that those who would be most benefited by the education theory most neglect it. People in your great establishments are too well off to care much for new sources of enjoyment, but it has been and still remains a constant mystery, why those innumerable small caverns, like a decayed surgery with rows of monumental bottles, have never let in upon themselves the healthful light, that would allure them for one moment from their pestles. We have often wondered by what law of endogenous life they can sustain existence. There are plants in the Kew Conservatories that flourish upon some principles Sir William Hooker could alone explain, being to all appearances independent of both soil and moisture. Great is the power of self-sustained vitality, but yet we must confess

to a passing shudder, in reflecting on the slight barrier that must exist between the disheartening monotony of pills and draughts and Prussic acid. Canadian travellers tell us, that there is no sight in nature like the slave's leap as he first touches British shores, and knows that he is free; surely the emancipated Druggist must have felt a similar sensation when he first heard of a Society that rescued him from the shackles of mere drudgery, gave him the inspiration of books, lectures, and the amenities of study, and by a well-directed education linked him to the enlargement and common interests of humanity.

We have no intention of surrendering this view of the subject for the sake of a few young gentlemen who bring the same disgrace on Chemistry which they would on any other pursuit they might dishonour with their choice. There are indeed some in whose case a little pharmacy has proved disastrous—a crisis often hastened by some fortunate experimental hit, to which, perhaps, an innocuous course of botany, and a month's analysis has put the climax. Elated with the scarcely opened prospect they exchange the laboratory for business, and hate it with a perfect hatred. Hapless is the master who may chance to engage them, still more unfortunate the assistants with whom they may associate. Despising the details of the shop, yet by no means fitted for a higher sphere, like Mahomet's coffin hanging between heaven and earth, they are neither Chemists nor philosophers: hankering always after something in the distance, but entirely oblivious of the duties that lie before them. There, says the exulting oppositionist, there is your education! What profit is it that a man should know how

to distinguish the florets of the disc and the ray, when he should be making infusion of chamomile? Is it not better to serve the waiting customers with their Rochelle Salt instead of pondering the knotty question whether its crystalline system is equi or unequiaxed?

"It must be so, Plato, thou reasonest well."

The honest-minded, hard-working, self-denying band of students, as unassuming in deportment as assiduous in their pursuits, are not to be lightly thought of for the sake of *some* exceptions, nor are their earnest hopes to be offered up at the shrine of such an inflation, no more than the world's locomotion should be stopped, because an occasional upstart drives an engine and sends it down an embankment.

Another spectral form should be quietly put in its grave. Like the ghost in Hamlet it comes before us in a questionable shape, and asks—Is not this same Education an interference with Medical Men?

Every man in his own sphere, is entitled to his own proper honour; yet Chemists sometimes act, or at least speak, as if to compromise their individual independence were to pay the best tribute of respect to other people; the world is wide enough for all. If some physicians look with jealousy (which we doubt altogether) on the attempts made by Druggists to enable them with better skill and more consequent success to carry out the views of the prescriber, the simplest method is to let them, but the idea is quite gratuitous, and disproved by every-day experience. Curious indeed is the peculiar line of mental argument adopted by some cautious reasoners. Let but a Druggist eke out his intermittent Pharmacy (whose

dying embers are fanned into life by an occasional prescription) with an incursion into his neighbours trade; let cigars and drugs repose together; medicine and cheap literature shake hands, whilst tea and coffee make no discord in the happy union of innumerable sundries; censure itself withholds the faintest disapproval; the learned forager is thought a nice, clever, industrious young man, *who sticks to his business.* But let him in an evil moment steal one glance at Fownes's *Chemistry* let him bestow a little thought on the inside of his elegantly gilded bottles; let him astound the native population by digging up his own Taraxacum, gathering his own herbs, making his own extracts, manufacturing his own chemicals, analysing his own soils, preparing his own physic, establishing his own wholesale trade, and keeping his own customers, who are not the less confident in him because now and then he reads a paper before a scientific meeting, and can converse in a rational manner about Dalton, Liebig, and Berzelius: why then the aforesaid cautious gentleman shakes his head, which he never ceases doing, until one fine morning our now rapidly rising Chemist passes him in his own brougham, leaving him to his speculations.

We suggest that medical men are infinitely more interfered with in their practise by weak preparations and ignorant dispensing than they can be with a well regulated, carefully-conducted shop, whose owner is himself personally acquainted with the objects that surround him; and we venture to assert, that Physicians have as great a horror of indiscriminate chemistry as the public. There is a danger, of course (the natural fault of all asso-

ciations), of being too scientific about simple things, but this is an error on the right side, and one very easily remedied; but that educated men themselves should be frightened at the industry and advance of others, is absurd. Statements such as these are made so often, and repeated with such an air of authority, that by degrees they are believed. We like to place a subject in its own broad light: "shoot folly as it flies."

Deeply are we indebted to the generosity of those who, a few years ago, created for the new generation advantages which were to themselves unknown; yet some there always are, and have been, who, because they do not monopolize the respect of those around them, fancy the world worse than it was when they were young; for these are captious days, in which even Lord Burleigh might shake his head in vain.

Advance the age must, therefore the wisest plan is to march on with it. No, says the malcontent; coaches did well enough in my time, away with steam; oil was sufficient once to light our streets, put out the gas! I was a Chemist before Societies were dreamt of, and sold physic, glue, paint, brushes, powder and shot, oils, whitening, red, white, and black lead, umber, hemp seed, canary seed, tea, sugar and treacle, arsenic and oxalic acid, so shall my son; I lived on and knew nothing, no more shall he. Chemistry should not distract his mind, reading shall not confuse him, research shall not contract his energies, still less shall companionship with learned and good men upset his business.

My excellent friend, good night. We sincerely hope the day will come when the Fahrenheit of chemical

enthusiasm may rise to its proper height, and that some well-trained Pharmaceutist, with a diploma in his counting-house and sound knowledge in his head, may vindicate our notions of education and send our friend's theories into the heaven of heavens. There let him rest, like an old boatman sitting by his creaky vessel drawn up upon the beach-side high and dry and dismal, muttering vengeance on the thousands who are crowding on the glad waters, and are now sailing rapidly out of his sight in search of other lands, fresh gains, and new associations.

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